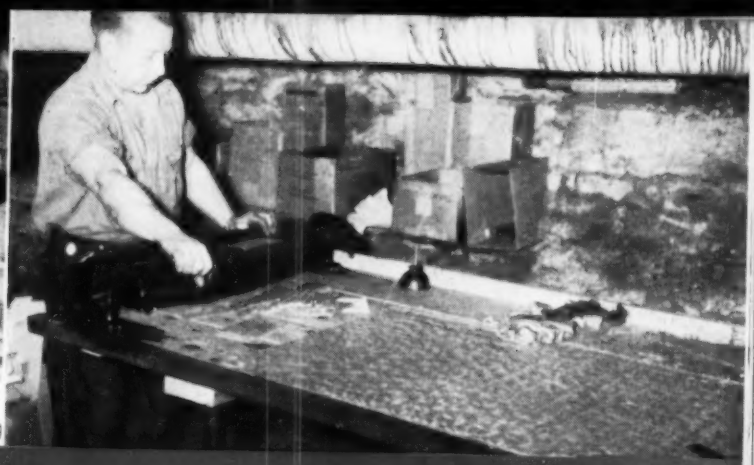
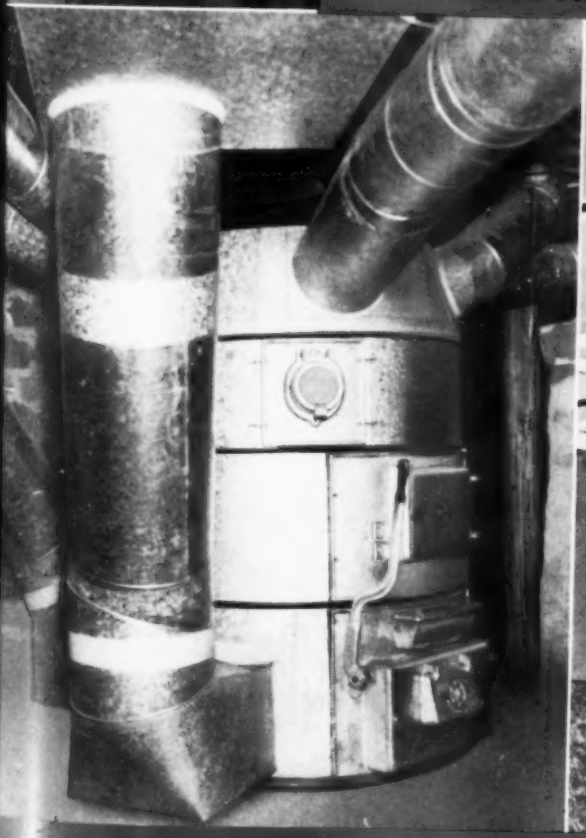
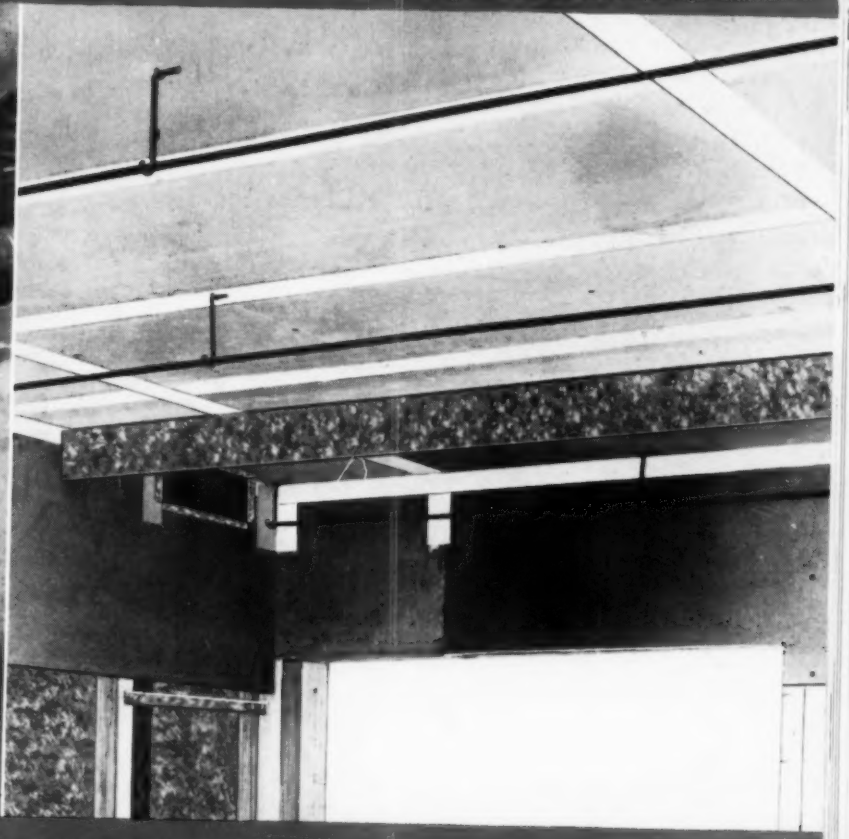


AMERICAN ARTISAN

RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING--SHEET METAL CONTRACTING

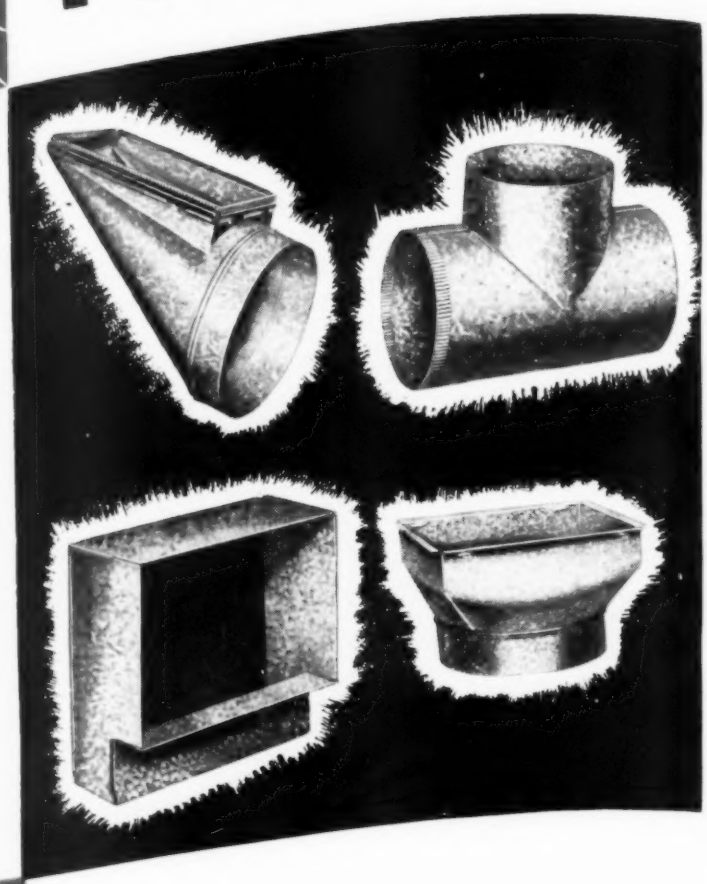




FEBRUARY, 1947

More Joint Apprentice Committees are Needed . . . . . Page 71
Design and Installation Report on a Warm Air Ceiling Panel . . . . . Page 75
Principles of Expansion and Contraction in Metals . . . . . Page 89

NO. 1 ON YOUR "HEAT" PARADE!



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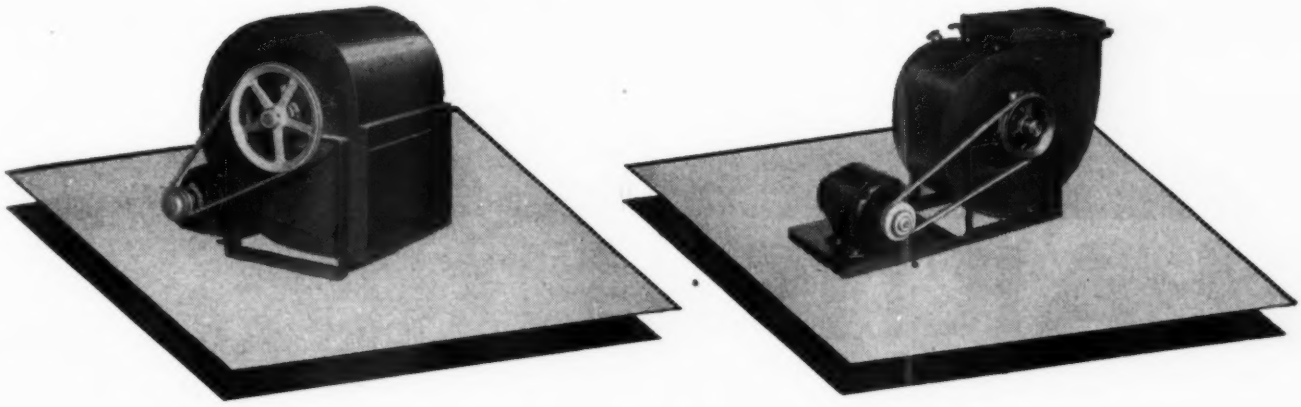
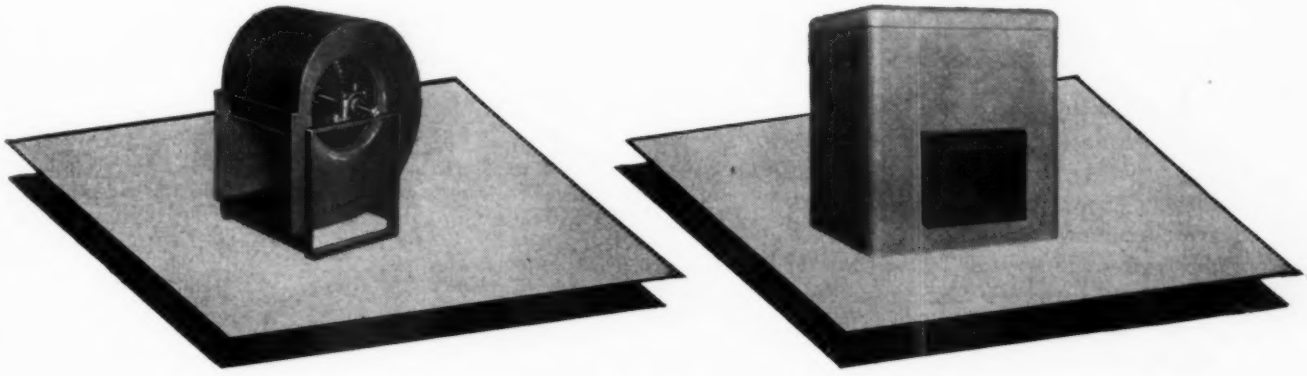


Warm Air Furnace Blowers . . . . . Belt Driven Supply and Exhaust Blowers



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with which are merged FURNACES & SHEET METALS — Warm-Air Heating

Covering All Activities in Residential Air Conditioning and Small Commercial Cooling, Warm Air Heating, Sheet Metal Contracting and Fabricating

J. D. Wilder, Editor

J. J. McCullough, Associate Editor A. A. Kennedy, Assistant Editor

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In This Issue

TIME is too short to publish in this issue a fair picture of the astonishing heating and air conditioning exposition held in Cleveland—but on page 72 "a quick picture" is given of the highlights. A complete summary of the important and interesting features will be published in the March issue.

•

Everyone is interested in the black and galvanized sheet situation. The problem is extremely complex, but certain basic facts are now available and have been summarized in the editorial on page 61. These facts will not get sheets, and will not explain what to do—but they may form a base from which to plan.

•

No series of articles on warm air panel heating can be complete without a warm air ceiling panel report; on page 75 the design and installation features of a ceiling panel system in Toledo are presented, together with certain over-all facts which have been disclosed in several ceiling panels.

•

One of the best basic fact articles published in several months appears on page 89—a description of the principles of expansion and contraction of metals.

Founded 1880

FEBRUARY, 1947

Volume 116, No. 2

Thanks Fellows!

for Labeling

SYNCROMATIC

"BEST" in Gas Heating

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Syncromatic Corporation
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The Editor's NOTE BOOK

Fuel Oil Tanks

Everybody seems to be searching for fuel oil tanks (the 275-gallon basement type)—and practically no one seems to be finding them. For what good it may do—and for the purpose of giving a friend of ours some work to do—AA announces that producers of oil tanks have an association and one announced purpose of this association is to distribute the tank production load among its members. The association is—National Truck and Trailer Tank Institute, 120 S. LaSalle St., Chicago (3), Ill. Our friend, the secretary, is Allan R. Smith. We don't mind if readers tell Al they heard of him from AA. There's a possibility — just a possibility, of course—that the Institute can be of help and there's a good chance that the two industries working together may solve the tank shortage.

◆

Our Big Mortgage

We have a federal debt of 263 billion dollars. That is a gross debt of approximately $2,000 for every man, woman and child in America. It is a gross debt of $5,330 for every employed worker in America.

The people will have to pay in taxes the interest on this debt—amounting to perhaps 5 billion dollars annually—and will be liable also for the amounts of the debt as they become due. This will be a big item in government budgets for years to come.

The United States has about as many "payrollers" as it has soldiers.

The Army stands today at less than 2,600,000 men while the Federal civilian payroll, at last report, carried 2,508,000 persons. The number of "payrollers" is declining, too—but at about one-tenth the rate at which the Army is discharging men.

The demobilization of this vast army of experts, economists, researchers, typists, and tabulators of trivia quickly would improve the whole country's chances of stability and prosperity.

60 70 80
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90
80
70
60
50
40
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The Mercoid Sensatherm is emerging in this post-war period unexcelled in its simple beauty, with its appealing lifetime lustrous natural metallic finish. There is no lacquer coating to become dull, nor can it ever tarnish. It holds its newness in appearance indefinitely. No polishing or scrubbing is ever necessary—simply wipe off any accumulated dust or dirt with a cloth,
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The Editor's NOTE BOOK

Gas Burner Status

Just in case anyone is interested, one of AA's representatives recently interviewed 13 manufacturers of gas conversion burners and asked these questions and got these answers:

(1) Are you caught up on your backlog? 10 Yes; 3 No.

(2) Are you getting cancellations? 6 Yes; 7 No.

(3) Are cancellations following gas company shutoff pattern? 7 Yes; 3 No.

(4) Have conversion burner sales reached their peak? 2 Yes; 11 No.

(5) Are you getting orders for replacement parts? 3 Yes; 10 No.

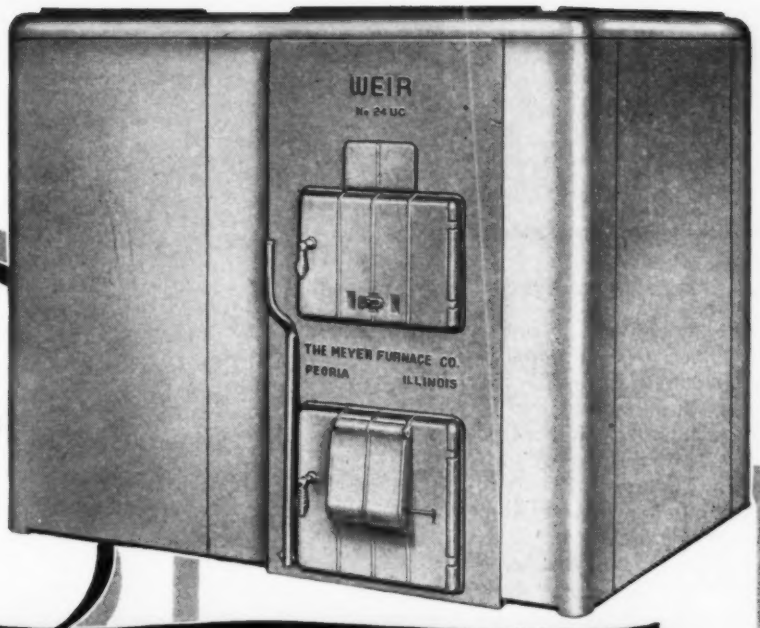
(6) Are controls easier to get? 8 Yes; 5 No.

(7) Do you plan to make gas-fired furnaces? 10 Yes; 3 No.

◆

Request With No Address

A short time ago a reader by the name of James Ryan sent in the sketch for a rectangular to rectangular, offset elbow and asked if the pattern for such a fitting had appeared in Mr. Neubecker's series on Air Conditioning Fittings. Mr. Ryan gave us no address so AA takes this means of advising that while no pattern exactly like the one requested has appeared, a pattern for a round to rectangular offset elbow appears on pages 42 and 45 of the Neubecker Pattern Binder. If Mr. Ryan reads this he can examine pages 42 and 45 if he has the Binder—if not we will supply tear sheets if Mr. Ryan will give us his address.



WEIR 'UC' SERIES
Winter Air Conditioner WITH *Integral Heating Element**

*Patent applied for

Positively GAS and DUST TIGHT

NEW and MODERN DESIGN *plus* THIS MAJOR IMPROVEMENT *in* FURNACE CONSTRUCTION

WEIR 'UC' Winter Air Conditioner offers eye-appealing modern styling—and equally modern improved performance that enables you to sell easily. Brings all the advantages of Winter Air Conditioning to your prospects who use coal.

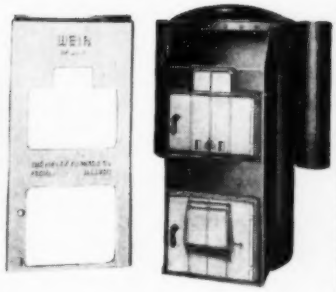
Easier Installation. No cumbersome front casting — no cementing. Riveted-&-welded construction guarantees leakproof installation.

Famous Weir Performance. Built to give cleaner, quicker heat and the comfort and convenience you expect from a WEIR. All the famous sales-building WEIR features including large radiator — inside protecting collar — duplex grate — swinging smoke curtain — and many others. Provision has been made for addition of summer cooling equipment at time of installation or later, as desired. Available with stoker for maximum convenience with solid fuel.

WEIR 'UC' Winter Air Conditioner is now in full production. Send for full information on this modern heating equipment and the advanced Integral Heating Element.

1

Integral heating element built with drum pouch and door seats all in one piece. Positively leakproof.

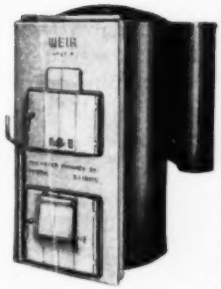


2

Pressed steel "front" slides over pouch. Casing hooks to front for a dust-tight fit.

3

Simply, easily assembled, the WEIR 'U' series cuts installation cost.



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The Editor's NOTE BOOK

New Recession Indicator

There have been innumerable indices used and touted as sure means of foretelling the curve of business, but one of the most unusual yet to come to our attention is that of Boris Shiskin, economist for the American Federation of Labor who recently stated the most dependable index he had found is expenditures on dental work.

When dental expenditures increase—good times are ahead. When dental expenditures shrink—recession and depression are ahead.

Right now, he says, dental expenditures are hitting the toboggan.

◆

Oil Heat in Little Towns

Said A. E. Hess, Managing Director, Oil Heat Institute of America, Inc. at the December meeting of the Wisconsin Independent Oil Jobbers:

"Numerous surveys have been conducted and the average of seven competent studies indicate that 77% of all the people who want new homes, GI's included, expect to have automatic heating. This figure is approximately confirmed by NHA, which says that 73% of the authorizations they have granted to start construction on new houses include automatic heating. If we need 12-million new non-farm homes there is then the prospect of about 8-million which are planning automatic heat. On a ten year program that could mean 800-thousand installations a year for automatic heating.

"Wartime rationing records disclose some startling facts; for instance, that *only* 15% of all oil heating installations are in towns or small cities of less than 50,000 population. Yet, from the 1940 census figures we find that 67-½% of our population is in those smaller places. Thus, 32-½% of our population, in larger cities, has 85% of existing oil heating, while the 67-½% of total population located in smaller communities has only 15% of the nation's oil heating installations.

"It's only a matter of simple deduction to conclude that the smaller towns are the oil heating frontier. This negligible penetration of the small town market is the result of several factors. Too often, in the pioneering 20's, oil burner installation, usually by inexperienced heating men, was anything but exact. Then — when some mechanical difficulty resulted there was no first-class service man available to correct it.

"In the small town nearly everyone would know all that happened to every one else. Small town people remembered and magnified early oil burner service trouble. Consequently, the average heating dealer did not then want to go very far in recommending burners, particularly since he would not have enough oil heating users to justify the cost of maintaining one good service man. Equipment and controls are vastly improved and one good service man can take care of a minimum of 300 customers very nicely. As we now return to normalcy the small town market becomes important."

◆

Really Hopped Up

The John L. Lewis fever ran such a temperature in an Illinois coal field during the last coal strike that 120 union miners, who own their own coal mine at Glenridge, went out on strike against themselves.

The UMW miners got together their savings and bought the mine in 1940. Only industry in the town of Glenridge, the miner-owners were making money—until they turned on themselves.

All models of the new

ROYAL

have non-corrosive

ALUMINUM

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Lighter weight—easier to handle—can't rust out—greater sales appeal

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Greater heat radiation...eliminates noise caused by contraction and expansion

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The Editor's NOTE BOOK

1946 Editorial Index

For several years past AA has published in each December issue an Index of Editorial Material as a convenience to readers who refer to published material months after an issue is mailed. This annual Index was not published in the December, 1946 issue, but within a short time a separate Index will be printed and will be available upon request.

◆

Jobs of Congress

Senator Ball of Minnesota says Congress is faced with three major jobs; (1) the establishment of a workable fiscal policy, reducing expenditures and taxes while balancing the budget; (2) withdrawing all wartime controls; (3) overhauling the labor legislation; all three developing whether or not America can evolve a framework in which a free economy can function. If freedom is to endure, says the Senator, none of the now thousands of political, social, economic groups which make up society can be allowed to dominate the government or each other and government must become an impartial dispenser of justice rather than an ally of any one group.

◆

Big Salaries

Last June the treasury department published the names and salaries of the 620 persons whose salaries from corporations were over $75,000. Why did these lucky people get all that dough?

The Socialists say they shouldn't, although the same doubts are not raised about the payment of equivalent amounts to a prize fighter for one evening's work, to a movie actor for a few pictures, or to a radio comedian for 40 half hour programs.

Some heads of most big businesses had accumulated fortunes before today's anti-big business drive got results. Now a poor boy's prospect to accumulate as much as a million dollars are nil. According to Mutual Life Insurance Company of New York, it is next to impossible to accumulate even $100,000. "Under today's income and estate tax laws, a man must earn $85,000 a year and live on $16,300 of it to leave an estate of $100,000 for his family 10 years from now," they say.

The annual salaries of all the 507 top business executives of the country together amount to $56,000,000. This is equivalent to 4¾ million dollars a month.

◆

W-o-r-k

Ceco Steel Products Corporation of Chicago is mailing to its customers and friends a printed "message" which possesses more than usual common sense. The "message" has to do with the theme of why there need be no depression if Americans will pitch in and W-O-R-K.

In briefest form this is the theme—there is too much irresponsible talk of depression; there need be no depression in the building industry because so much building is needed—and desperately. Today's problem is complex, but can be solved by straight thinking and by a willingness of all Americans to work.

Management must work. Labor must work — produce more instead of less; reduce overall costs per unit; justify high wages. Management and labor must both have something left after they've made their investment of time and capital.

America has had its post-war breathing spell—from now on shortages must disappear; costs must start down; management must begin to manage and plan; everyone must w-o-r-k.

JOHN ZINK'S NEW UNIT HEATER

100,000 B.T.U.

This new and unique design in suspended space heaters features: **More Head Room—Compact Design—More Heat from gas burned,** gas company test shows overall efficiency of 82%.

Where floor space is at a premium this turbine type unit has greater heating capacity. Controls are built-in. Unit is shipped completely assembled ready for installation.

One unit will heat a 40′ x 80′ space. It is A. G. A. approved for liquefied petroleum gases, manufactured or natural gas.

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FABRICATES 5 DIFFERENT LOCKS OR SEAM SECTIONS - - USES 7 DIFFERENT ROLL SETS - - HANDLES ALL GAUGES FROM 18 TO 26

ROLL SETS	GAUGE	APPROX. MATERIAL USED	OTHER DATA
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Pittsburgh Lock	22-26	1"	Depth of pocket 5/16"
Double Seam (Type L)	18-22	1⅛"	½" seam
Double Seam (Type S)	22-26	1"	⅜" seam
Drive Cleat	20-26	2⅛"	Cleat width 1⅛"
Standing Seam	16-20	2⅛"	¾" height**
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1½ H.P. motor, double V belt drive, all steel forming head, case hardened gears and forming rolls, hardened and ground shafts and roller bearings throughout.

*Built-in. **Fabricate both single and double edge by simple adjustment of gauge. ***On straight pieces only.

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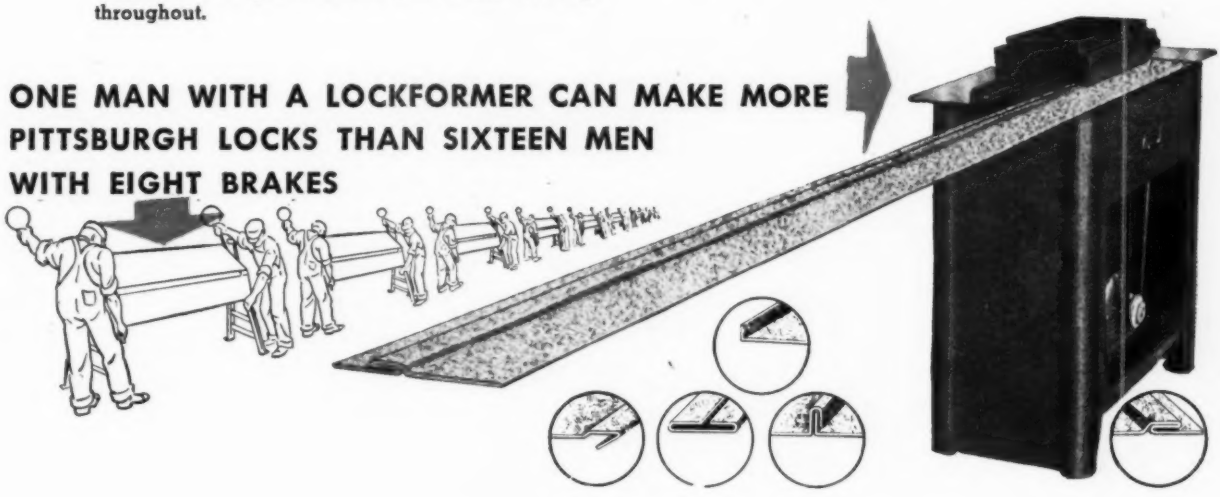

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The Editor's NOTE BOOK

Truck Furnace Cleaner

For some strange reason (strange things are always happening in the publishing business) AA has received a number of requests lately for suggestions on buying or building truck mounted furnace cleaners. To the best of our knowledge, no firm today makes such a cleaner for sale. Without too much trouble (but at a cost of around $1,000) such a cleaner can be built and has been by some readers, A really complete description of such a cleaner has been submitted by a reader accompanied by numerous sketches, and as soon as possible finished drawings will be ready and AA will publish this description.

◆

Picketing 1-Man Store

The Supreme Court of Minnesota has ruled that it is legal for a labor union to picket a one-man grocery or meat market—a place where no one is employed—to force the owner of the store to join the union, it is reported by former Congressman Samuel B. Pettengill. A Legislative Commission is making an investigation of the situation in Illinois.

◆

New Research Organization

A new agency to produce market facts—"National Family Opinion," 137 North Erie St., Toledo, Ohio, is making its bow. Formed in 1946, the agency offers "panels," each of 1,000 families, covering every geographical subdivision of the market; each panel composed of families especially selected from the mass for those characteristics that are valuable to marketers. Each panel parallels within 1 per cent the national census averages as to family size, age and income.

The agency was organized and is owned by Howard A. Trumbull who formerly was a marketing executive for Owens-Illinois Glass Co.

A recent study by the agency says coal is used by 48.8% of all home owners; gas by 22.3%; oil by 22.1%; wood by 18.1%. Among furnace users the comparison is: coal 61.4%; oil 21.4%; gas 17.8%; wood 7%.

Very interesting is the agency's claim that more people past 50 use coal than any other age group—we always thought gas and oil were more popular with the oldsters—less work, more income, etc.

There are other interesting data in a report on heating which the agency will mail.

◆

Industry's Big Job

American industry's next big job, says Ira Mosher, National Ass'n of Manufacturers, is to obtain steady employment for our workers. He said in a recent address:

"One of the basic needs which management can foresee and on which it can take resolute action is regular employment; to undertake to provide steady employment. It is a job which only management can do. If there must be temporary shutdowns and cutbacks in industry, management should figure out some way to carry the workers through such operations. Industry must also help the worker build adequate unemployment insurance, pension funds and sickness and health benefits for himself and his family.

Year-round employment is certainly not easy to achieve throughout all industries. Maybe not at all in some. But workers have to eat 365 days a year. They must pay their bills for fifty-two weeks a year. Their rent comes due every month out of the twelve. Any industry worthy of the name should support its workers, and management faces no more important job, as I see it, than to devise ways to spread the payroll over fifty-two weeks a year."

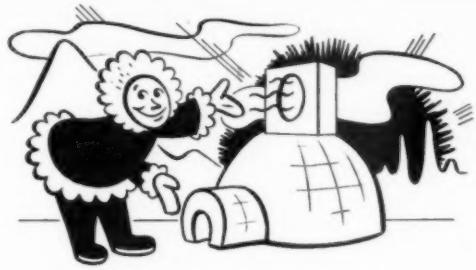
Sampsel
DAMPER CONTROL

Almost 9,000,000 homes are prospects for this automatic heat . . . you can sell them Sampsel Damper Controls for healthful comfort—to save money and fuel. Sturdy, rugged construction insures years of dependable performance. Heavy duty transformer built into motor housing. Easy installation. See your jobber for details or write for catalog showing complete Sampsel line . . . Sampsel Time Control, Inc., Spring Valley, Ill.

Damper Control Package Units are available with or without Warm Air Limit Control and choice of Standard or Day-Night Clock Thermostat. Each kit includes all accessories needed for easy installation.

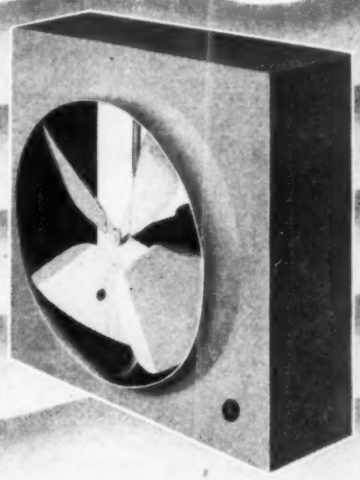
Sampsel

You can sell Sampsel Damper Control Package Units right now — during the heating season. Displays, folders, dealer helps available.



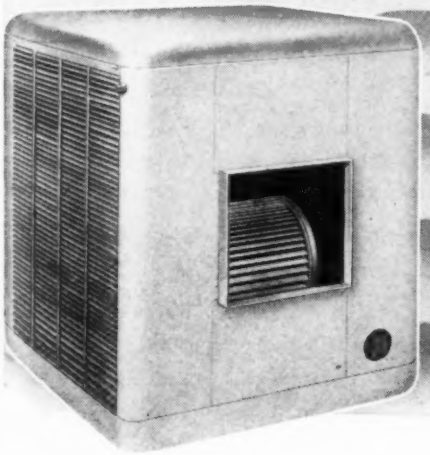
The time to think about HOME-COOLING is when it's COLD

Smart plumbing and heating dealers are thinking about their summer home-cooling products NOW. They're getting ready to turn the seasonal home-heating slump into year 'round profits. And now, there are two brand new Rheem products just built to fit this summer merchandising problem.



THE RHEEM ATTIC FAN

In humid regions, there's the Rheem attic fan to fill a whole home with circulating air on the hottest, stillest nights. Sell "sleep conditioned" weather, and watch your summer slump turn into a boom.



THE RHEEM EVAPORATIVE COOLER

In arid regions the Rheem evaporative cooler gives a cool, humidified "inside climate" no matter how hot and dry it gets outside. Sell this crisp, refreshing summer comfort to your home-heating customers, and watch your profits go up and up.

Whatever your summer climate . . . whatever your summer sales problem, one of these easy-to-sell Rheem products will turn summertime into profit-time for you.

Get in touch with your local plumbing and heating jobber right away. He'll tell you how easy it is to stock this great line of Rheem home cooling products. Call him . . . TODAY. And for full information, write Rheem, 570 Lexington Avenue, New York 22, N. Y.

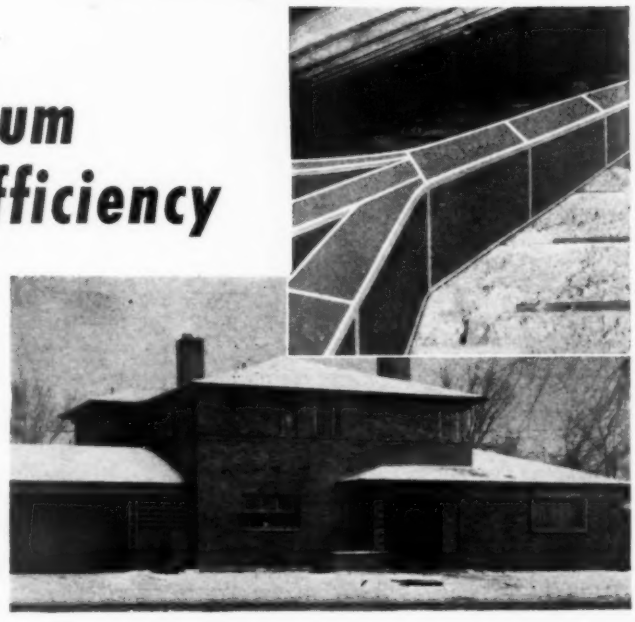
RHEEM

RHEEM

. . . making houses into homes

Insulate RESIDENTIAL DUCT WORK

for Maximum Heating Efficiency



IN ALL NEW RESIDENTIAL CONSTRUCTION DEMAND DUX-SULATION—THE ALL PURPOSE INSULATION!

Photo at right shows a typical attic duct system covered with money-saving DUX-SULATION.

DUX-SULATION IN ATTRACTIVE COMPLETE PACKAGE

A flexible insulating blanket ½" and 1" thick having a K factor .27 B.T.U. Comes complete with corner tape and adhesive for cementing on to sheet metal duct work. Dux-Sulation comes 36" wide in a roll containing 100 square feet. Easy to apply and a very efficient insulation against temperature losses, condensation and noise travel. Will not rot, chip or crack.

CUT DOWN YOUR SERVICE AND "CALL BACK" COSTS! GIVE YOUR TRADE ALL THE OTHER BENEFITS DUX-SULATION PROVIDES!

Lower fuel consumption and greater cleanliness result from DUX-SULATION protected ducts in homes.

DUX-SULATION applied to all bare metal ducts gives you CONTROL of Temperature; also quiets mechanical and air borne Noises—insuring comfort and efficiency. These benefits are essential and highly desirable in all modern homes.

DUX-SULATION saves 75% of the bare duct heat loss—has high thermal insulating efficiency of 70% (K factor .27 B.T.U.). Is made ½" and 1" thick and has smooth surface giving exceptionally low frictional resistance (F=0.0001322).

DUX-SULATION also deadens metallic noises when applied to outside of ducts and will absorb 70% of air borne noises in less than 10 lineal feet of inside lined duct.

You and your customers will benefit by getting the full story told in our valuable Bulletin No. 411-A.

FIND OUT WHY THOUSANDS OF DEALERS ARE BUILDING AN INCREASINGLY PROFITABLE BUSINESS THRU APPLYING DUX-SULATION TO NEW RESIDENTIAL HEATING PLANTS.

Order Dux-Sulation Today from Your Local Supply House!

Write Today for Our Informative Bulletin No. 411-A

GRANT WILSON, INC.
141 WEST JACKSON BLVD. AT LA SALLE ST. . . . CHICAGO 4, ILL.
[22nd Floor, Board of Trade Bldg. . . . Phone: Wabash 8220]

CENTURY *Experience*

There's a famous Century burner for every heating need . . . With seven furnace burner units, ranging from 75,000 to 350,000 Btu capacity, and four oil burners ranging from one to twenty gallons per hour capacity, Century offers a complete line for profit-minded dealers who appreciate having a franchise that allows them to keep in stock top-quality merchandise that will heat every size building from bungalow to mansion.

Enterprising dealers who keep accurate cost records consistently report that the strong, substantial construction of Century equipment makes servicing easy and economical. Century products are built to perform. Inquire about our profitable franchise soon.

Domestic water units and boiler burner units have been temporarily discontinued from our line due to material shortages.

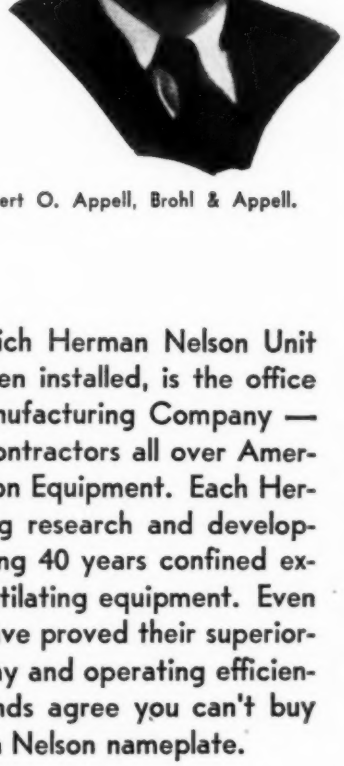
CENTURY
Engineering Corporation
CEDAR RAPIDS, IOWA

OIL BURNERS • BOILER-BURNER UNITS • WARM AIR FURNACES
HUMIDIFIERS • WATER HEATERS • AIR CONDITIONING

Brohl & Appell of Sandusky, Ohio

INSTALLED HERMAN NELSON

Apex Electrical Manufacturing Company
Sandusky Division, Sandusky, Ohio
John L. Thomas, Designing Engineer
Brohl & Appell, Heating Contractor, Sandusky, Ohio



Albert O. Appell, Brohl & Appell.

Herman Nelson Unit Ventilators

Herman Nelson De Luxe Unit Heaters

Among the many outstanding buildings in which Herman Nelson Unit Ventilators and De Luxe Unit Heaters have been installed, is the office of the recently completed Apex Electrical Manufacturing Company — Sandusky Division, Sandusky, Ohio. Heating Contractors all over America show a marked preference for Herman Nelson Equipment. Each Herman Nelson Product is the result of painstaking research and development — backed by the experience gained during 40 years confined exclusively to the manufacture of heating and ventilating equipment. Even more important . . . Herman Nelson Products have proved their superiority to Contractors by providing greater economy and operating efficiency in actual service. That's the reason thousands agree you can't buy better equipment than that bearing the Herman Nelson nameplate.

Contact the nearest Herman Nelson Distributor or Product Application Engineer. He is trained and qualified to assist you in the proper application of Herman Nelson Products . . . to help you get more business through the correct installation of quality products that really do the job.

herman nelson moline illinois

THE HERMAN NELSON CORPORATION

for 40 years manufacturers of quality heating and ventilating products

MOLINE, ILLINOIS

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Chicago—C. A. Pickett, Mgr., J. C. Donaldson, Herman Stai, R. C. Taylor, Product Application Engineers.
Cincinnati—W. J. Killian, Product Application Engineer.
Cleveland—Frank B. Johnston, Jr., Product Application Engineer.
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Syracuse—Lawrence C. Ward, Product Application Engineer.
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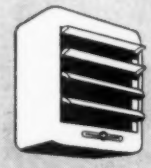
Herman Nelson Direct Drive Propeller Fans

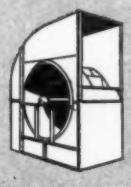
Herman Nelson Belt Drive Propeller Fans



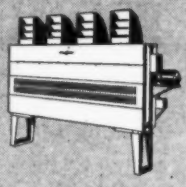
Herman Nelson Horizontal Shaft Propeller-Fan Type Unit Heaters

Herman Nelson Type H Centrifugal Fans

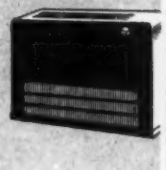
Herman Nelson Vertical Shaft Propeller-Fan Type Unit Heaters



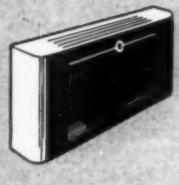
Herman Nelson Type HB Centrifugal Fans



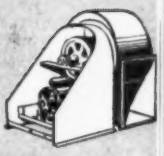
Herman Nelson Blower-Fan Type Unit Heaters



Herman Nelson De Luxe Unit Heaters



Herman Nelson Unit Ventilators



Herman Nelson Belt Drive Unit Blowers

Herman Nelson Direct Drive Unit Blowers

Whether you need a pound or a ton of **Steel**

...call us for prompt, courteous service

No matter what your steel requirements may be ... Stainless, High Strength, or Alloy Steels ... Hot Rolled or Cold Finished Bars, Structural Shapes, Plates, Sheets, Machinery, etc.,— our facilities are at your disposal to give you the kind of service you have the right to expect. Call, write or wire our warehouse nearest you.

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FOR STEEL USERS

UNITED STATES STEEL SUPPLY COMPANY

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UNITED STATES STEEL

With Mueller Climatrol, you sell living comfort that's "up-to-date" for years to come

That's why you can depend on holding a profitable share of the home-building and modernization market

Whether they're building or modernizing, homeowners want comfort at its best — today and through the years to come. And that's exactly what you offer them with Mueller Climatrol. The *True Indoor Comfort* of "climate control" meets today's higher standards — and every Climatrol model is planned to be adapted easily to future air-conditioning developments.

With Mueller's complete line, you can provide the exact size and type Climatrol for any home. Each model is specially designed for efficiency with a specific fuel — gas, oil, or coal — and engineered for the utmost convenience, comfort, and economy. Today's design-conscious home-planners are particularly pleased with the smart, modern styling of the new Mueller models.

Your efforts are supported by Mueller's national advertising and the 90-year performance record of the Mueller line — and by our determined effort to make production match the growing demand.

Write for Bulletins!

L. J. Mueller Furnace Co.
2010 W. Oklahoma Ave. • Milwaukee 7, Wisconsin

MEMBER NATIONAL WARM AIR HEATING AND AIR CONDITIONING ASSOCIATION — INDOOR COMFORT

MUELLER Climatrol

Reg. U. S. Pat. Off.

D-70

PUT THIS NEW *SALESMAN* TO WORK FOR YOU!

GET RID OF last winter's DIRT!
Install clean, new DUST-STOP Filters
IN YOUR FURNACE NOW!
DUST-STOPS - a FIBERGLAS product
STANDARD EQUIPMENT IN MOST FILTER-EQUIPPED WARM AIR FURNACES

SELL MORE DUST-STOPS* THIS SPRING!

*T. M. REG. U. S. PAT. OFF.

DUST-STOP Replacement Filters for forced-warm-air furnaces can be a real money-maker for you this Spring. Standard equipment in nearly two million modern warm-air heating units, DUST-STOPS remove atmospheric dirt so effectively that they should be replaced twice a year.

BOOST SERVICE BUSINESS! A profitable item in themselves, DUST-STOPS may also be used to build extra "service" business—in the Spring and Summer when it's most desirable. Field-tested promotion helps make this easy, and they are yours for the asking.

GET FREE SELLING KIT! Write today for the new Spring store display (shown above with actual filter), colorful window streamer, other useful selling helps. Check over the many other DUST-STOP promotional materials available—direct mail, radio spot scripts, small-space newspaper ads, etc. Order FREE KIT, No. D47-2.

Owens-Corning Fiberglas Corp.,
Dep't 930,
Toledo 1, Ohio

Gentlemen: Please send me, without cost or obligation, one Spring DUST-STOP Promotion Kit, No. D47-2.

Name_____

Firm_____

Address_____

City_____ State_____

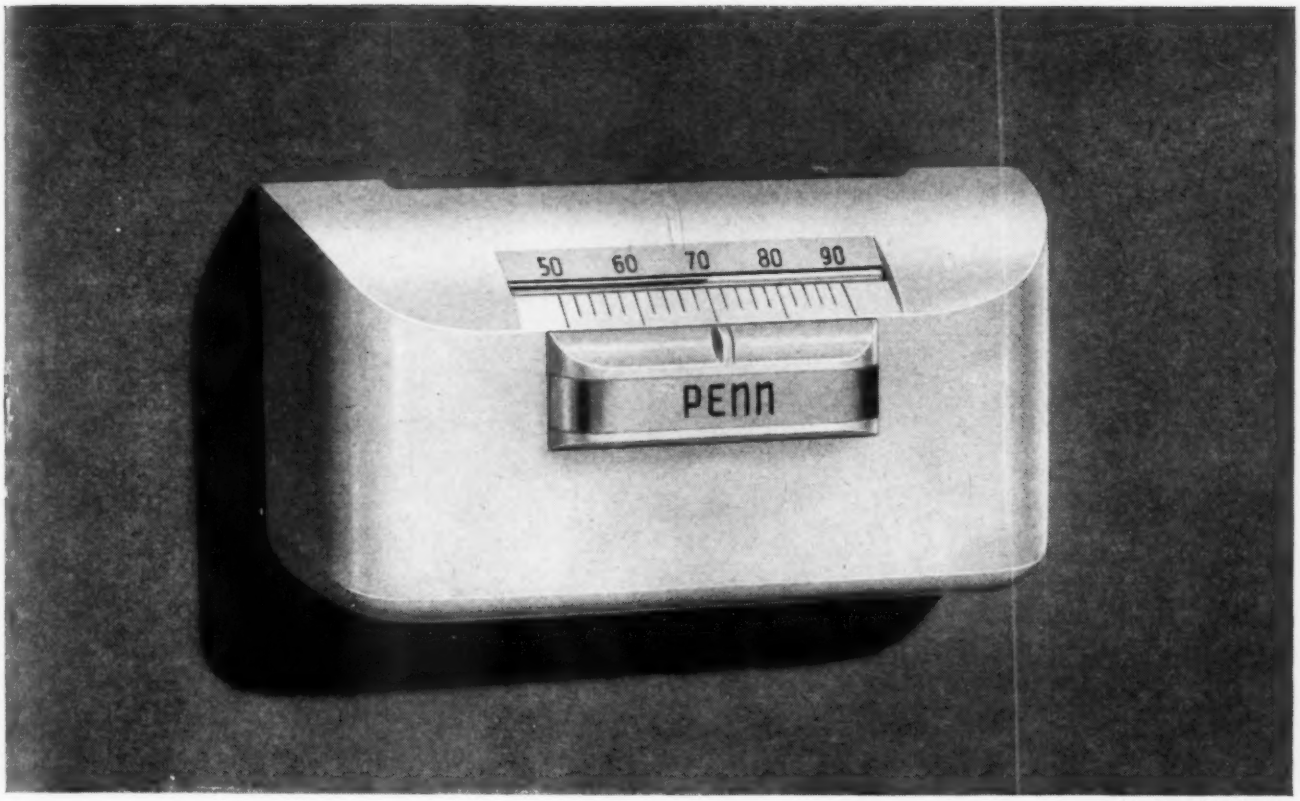
We buy DUST-STOPS from_____

MAIL THIS COUPON TODAY!

OWENS-CORNING
FIBERGLAS CORPORATION

MEMBER NATIONAL WARM AIR HEATING AND AIR CONDITIONING ASSOCIATION INDOOR COMFORT

"Your partner whose Actions speak louder than words"



Actual Size Reproduction

STYLING that's new and different!

DO YOU LIKE IT?

No . . . it isn't built yet. So far we've only been *thinking* about this new horizontal thermostat (shown actual size). True, we believe it has many advantages over the present-day vertical type thermostat. This new one has large, easily read numerals and its large thermometer can be read from any angle. It will incorporate heat anticipation and several mechanical improvements. But we want your opinion before we build it . . . do you like this *new horizontal style thermostat?* At the right is your ballot. We'd appreciate it if you'd fill it in—*and give us your vote. Penn Electric Switch Co., Goshen, Ind.*

do you like the styling of this NEW THERMOSTAT?

☐ yes ☐ no

Name_____

Title_____

Company_____

Address_____

City_____ State_____

DE

PENN

AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

"They don't get along together, Mister"

Say you're going over a house with the owner, checking over new sheet-metal work to be done. A peeling gutter or down-spout offers you a ready-made opportunity to build good-will with your customer and his neighbors.

Point out that zinc, with all its good protective qualities, is an enemy of paint. That the galvanized coating dries out the paint oils and the paint gets brittle and starts to peel and flake off.

Then you can say something about ARMCO PAINTGRIP. How this special galvanized steel takes and holds paint — you've seen it yourself. Why? Because it's Bonderized at the mill to make paint really stick to it — several times longer than on ordinary galvanized steel. And that *saves many dollars* for repainting jobs.

Remember, too, it *actually costs less* to use ARMCO Galvanized PAINTGRIP than it does to buy ordinary galvanized steel and acid-treat before painting.

Yes, steel is still "tight" . . . you just can't get all the ARMCO PAINTGRIP you'd like right now. But your Armco Distributor is doing his best to spread his orders around fairly. Keep in touch with him and give him a chance to serve you when he can. Armco mills are rolling around the clock to move more steel through to you. The American Rolling Mill Co., 221 Curtis Street, Middletown, Ohio. Export: The Armco International Corporation.

GALVANIZED PAINTGRIP ARMCO STEEL

THE AMERICAN ROLLING MILL COMPANY

- SPECIAL-PURPOSE SHEET STEELS
- STAINLESS STEEL SHEETS, STRIP, BARS AND WIRE

You don't have to sell them HEALTH!

Every home owner knows the discomforts of dry hot air. Health authorities agree that moist air prevents colds and respiratory ailments, promotes health and vigor. Every home owner wants the kind of healthful comfort that is provided only by Thermo-Drip Heat Regulated Humidifiers.

Thermo-Drip Humidifiers moisten the air as it is heated—*in direct proportion to temperature.* Thermo-Drip Humidifiers positively regulate water feed and accurately control the amount of evaporation so that the minutely correct percentage of moisture is added to the air at all times. Thermo-Drip equipped furnaces give your customers the kind of health protection that doctors approve.

Thermo-Drip Humidifiers are manufactured from the finest materials and are designed and engineered to simplify your installation. Made in a variety of pan sizes for every type or make of warm air furnace. Write today for all the facts.

THERE'S A THERMO-DRIP HUMIDIFIER FOR EVERY TYPE OR MAKE OF WARM AIR FURNACE

THERMO-DRIP HEAT REGULATED HUMIDIFIERS

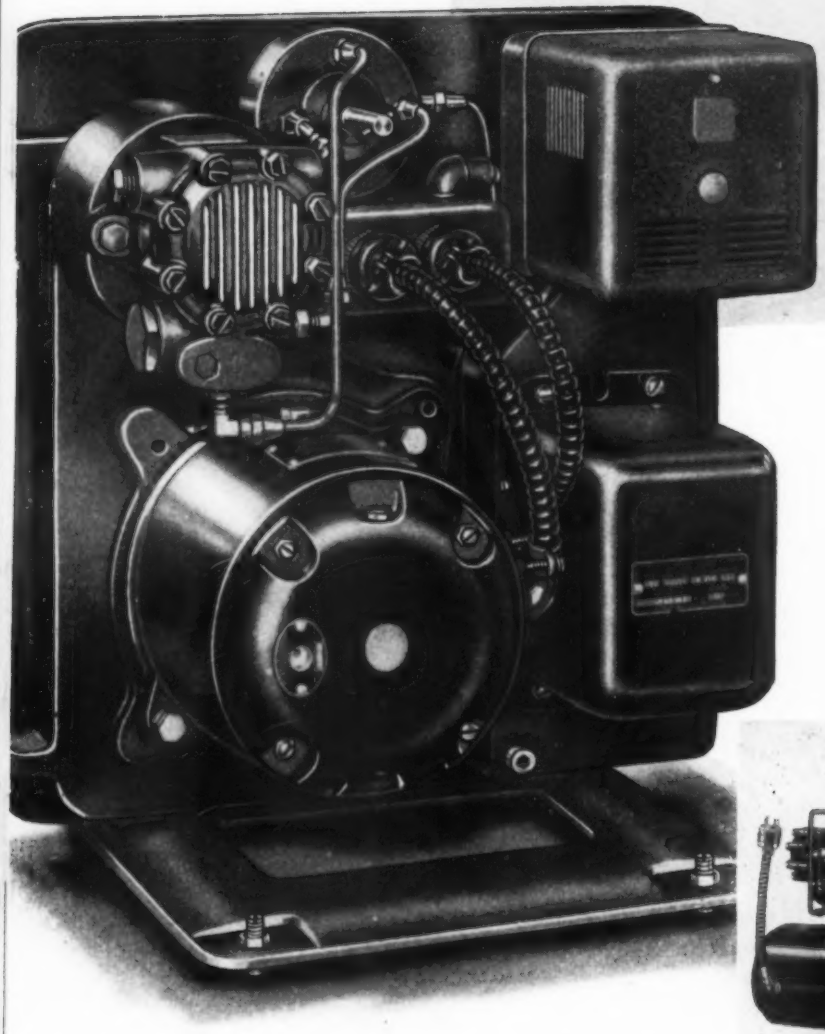
Made by

Automatic **HUMIDIFIER CO.**

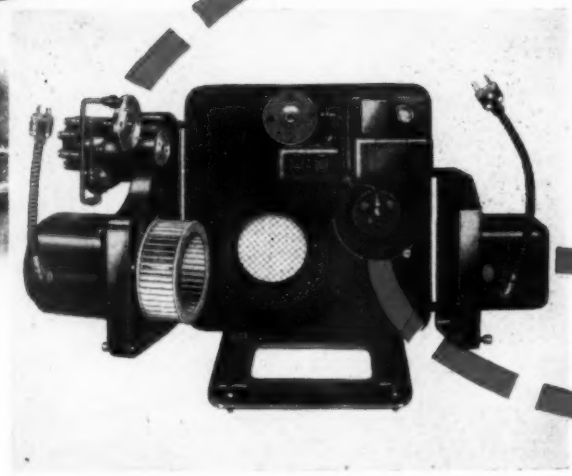
CEDAR FALLS . . IOWA

SEE

FOR QUICK-E



PATENTS PENDING



A rear view of the burner with cover removed. All parts easily accessible, convenient to work on. MORE THAN THAT—

The motor, pump or transformer *can be changed in two minutes!* Simply disconnect the new fuel line joint with special wrench, THEN:

Unplug two electric connections and swing open the service units, like two doors, as shown at right.

WHAT DOES THIS MEAN TO YOU?

Years from now . . . or in an emergency it will be a very simple, rapid and inexpensive move for you to go to your customer's home, remove the old unit and slip a new one in, bring the old one back to your shop for repair. You don't have to spend hours in your customer's basement—down on your knees on that hard cement floor—to replace a motor, pump or transformer! More than that—there's no interruption of heat . . . you replace a defective unit with a new one in *minutes!* You'll save yourself time and money and keep a satisfied customer.

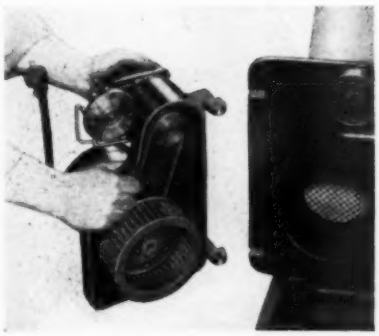
Master Kraft

REG. U. S. PAT. OFF.

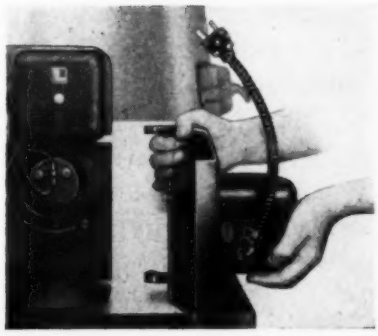
OIL BURNERS

HOW IT COMES APART!

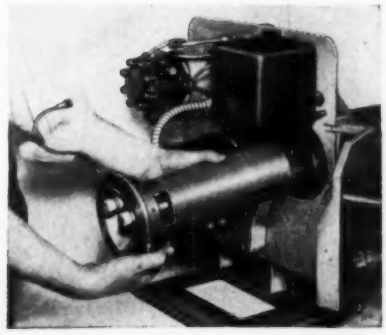
K—EASY—LOW COST SERVICE!



Next—pull two pins and remove the unit, replace it with a new one. THE ENTIRE QUICK-CHANGE TAKES ONLY TWO MINUTES!



The transformer likewise can be replaced with a new one in two minutes with this QUICK, EASY, SIMPLIFIED SERVICE.



The entire combustion head may be quickly withdrawn for inspection or servicing in one minute and thirty seconds!

THIS MARVELOUS NEW BURNER

will be ready to roll off our production lines just as soon as materials are available.

MEANTIME we are continuing to manufacture our popular pre-war type of burner, the well-known Master Kraft —Models T through M2. (Model T Burner shown at right.)

FREE - - - Send for this booklet—Shows you how the new Master Kraft conversion burner comes apart. Describes in detail the new Dual-Oxenizer—a war-time invention—which combines oil and oxygen to a degree never before approached.

MANUFACTURED BY

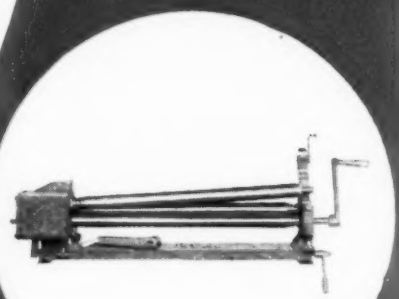
HARVEY-WHIPPLE

INCORPORATED

SPRINGFIELD, MASSACHUSETTS

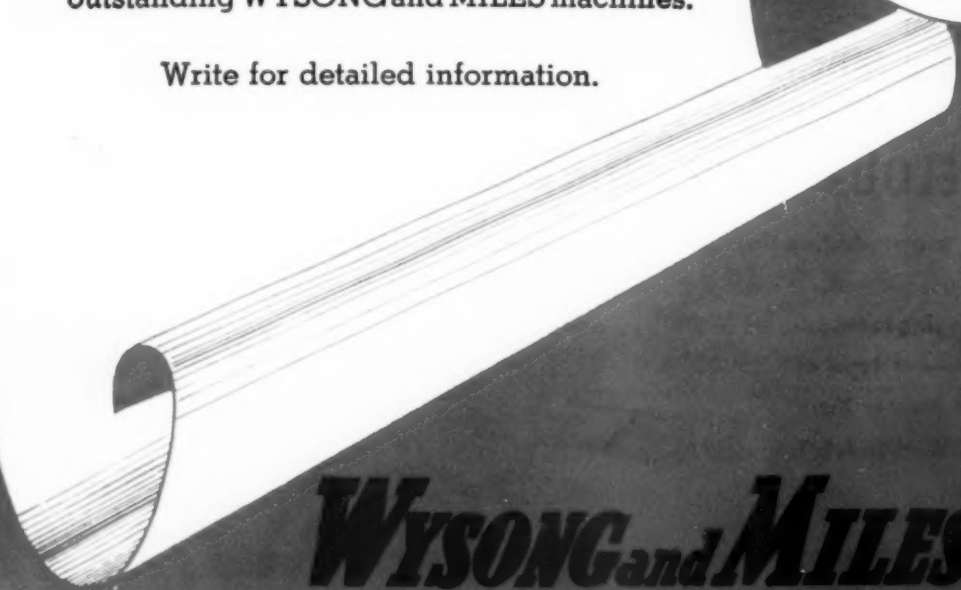
roll sheets with FEWER passes!

HERE is the slip roll former that keeps pace with ever increasing work loads. Gear ratio of 4 to 1 enables operator to roll metal swiftly and easily. Smooth, high-carbon steel rolls insure accurate forming. Circular grooves provide for inside and outside wired edges. Readily accessible hand screws give quick adjustments for clearance and radius. Jigs and fixtures are used in the drilling and machining of every part of every WYSONG and MILES machine . . . your guarantee of uniformly superior machines.



Plan for increasing work loads with the No. 836 or No. 842 Slip Roll Formers. They are outstanding WYSONG and MILES machines.

Write for detailed information.



WYSONG and MILES Co.

GREENSBORO, NORTH CAROLINA

DESIGNERS AND BUILDERS OF MACHINE TOOLS FOR OVER 45 YEARS

MEMBER NATIONAL WARM AIR HEATING AND AIR CONDITIONING ASSOCIATION INDOOR COMFORT

Over the years of steady progress in the development of better gravity furnaces RYBOLT Series 15 has always been outstanding for its efficient and economical performance.

It is shown here as a symbol of RYBOLT prestige for quality and dependability in the heating field. As it always has before, the RYBOLT gravity furnace today embodies many important new improvements and refinements developed by our engineering staff. This applies also to the complete RYBOLT line of warm air heating and air conditioning units—fired by all permitted fuels—for all home heating requirements. As a better line throughout it represents unusual sales possibilities for you.

THE RYBOLT HEATER COMPANY

615 MILLER STREET ★ ASHLAND, OHIO

The Brand most in demand...

U·S·S STEEL SHEETS were never in greater demand. That's why there are still not enough of them to go around.

However, there's a bright side to this situation. The present scarcities are but temporary. And soon we hope we'll be able to supply everyone with all the U·S·S Steel Sheets needed.

So keep asking your jobber for these easy-to-fabricate, good-looking, long-lasting sheets. It's entirely possible that he may now have just what you need. If he doesn't, remember that we are doing our utmost to keep him stocked. If you should have to wait awhile for your order, your patience will be well rewarded, for U·S·S Steel Sheets are second to none . . . in fabricating quality . . . in selling value!

CARNEGIE-ILLINOIS STEEL CORPORATION, *Pittsburgh and Chicago*
COLUMBIA STEEL COMPANY, *San Francisco*
TENNESSEE COAL, IRON & RAILROAD COMPANY, *Birmingham*

United States Steel Supply Company, Chicago, *Warehouse Distributors*
United States Steel Export Company, New York
7-42

UNITED STATES STEEL

STABILITY

MISTER DEALER . . . LOOK TO THE LEADER FOR SATISFACTION IN EVERY WAY

When you make a tie-in with a manufacturer you want to know that that manufacturer has stability and permanence as well as a fine product. Silver Flame is America's recognized leader in the entire industry, featured by 14 great Public Utilities! There still remain some important territories open for distributorship. Inquire today!

SILVER FLAME

America's Leading

GAS CONVERSION BURNER

MORE FINE SELLING FEATURES THAN ANY OTHER BURNER BUILT!

(HERE ARE BUT A FEW OF THEM)

- *The ONE burner that operates perfectly on all three gases: Natural, Propane, Manufactured!*
- *The ONE burner sold with a 3 YEAR PARTS GUARANTEE!*
- *Operates on about 1/3 normal fuel flow.*
- *Automatic Safety Pilot seals gas valve unless light is burning PERFECTLY!*
- *Automatic Gas Valves controlled by room thermostat.*
- *Automatic Gas Pressure Regulator maintains efficient flame always.*
- *Trouble-free! Care-free!*

CERTIFIED

YES! SILVER FLAME IS THE ONE BURNER THAT BURNS ALL 3 NATURAL PROPANE MANUFACTURED

FOR AVAILABLE DISTRIBUTORSHIPS . . . WRITE, WIRE OR PHONE

SILVER FLAME INC.

7020 FENKELL, DETROIT 21, MICH.

UNiversity 1-1411

Temperature Extremes

mastered... with this ALL-WEATHER Control

WEATHER extremes present the greatest challenge to any automatic temperature control system. And that is when the All-Weather Control does its work.

In bitter weather, it provides a definite high safety limit on furnace temperature—and also reduces waste of fuel resulting from excessive heat loss up the chimney.

In mild weather, it holds the fire, prevents it from going out, jogs it just enough to keep a small fire alive.

Thus, when used with any Pioneer heat regulator system, the All-Weather Control provides factors of safety, convenience, and economy that are worth many times its moderate cost. By controlling furnace temperatures under wide extremes of weather, it provides all the benefits of automatic temperature control through every day of the entire heating season.

Available in two types: *Bonnet Mounting*, for warm air furnaces with gravity circulation. *Stack Mounting*, for all other types of heating plants. Also available as high-limit switch only for use on low voltage.

CONSERVE FUEL WITH PIONEER HEAT REGULATORS

The Pioneer heat anticipating *Thermostat* with Red Signal Light, the Pioneer *Damper Motor* and *Transformer* PLUS the *All-Weather Control* provide ideal automatic heat regulation for use on any hand-fired solid fuel heating system . . . save fuel through more efficient combustion.

FOR WARM AIR • HOT WATER • STEAM

Pioneer Controls

For full information write The MASTER ELECTRIC Company Aircraft and Electrical Controls Division — Dayton 1, Ohio

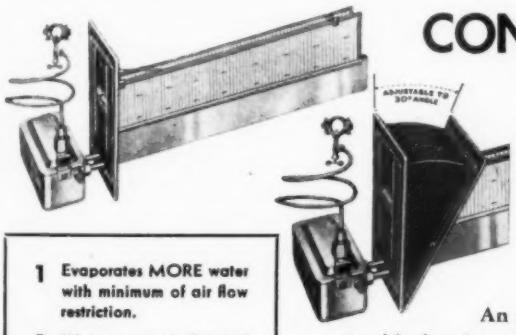
MASTER

HERE'S HOW to Make MANY Extra Sales in 1947 . . .

MAID-O'-MIST Inc.
AUTOMATIC HUMIDIFIERS

CONCENTRATE ON THIS BIG PROFIT LINE . . . Low in Cost . . . Easy to Install . . . Vastly Superior Performance

Every home needs HUMIDITY! In 1947 go after this big, lucrative market . . . and remember when you handle MAID-O'-MIST Humidifiers you're recommending the VERY BEST . . . used for years by leading furnace manufacturers as standard equipment. *Write to us today for complete information and prices.*



CONVECTOR TYPE *Automatic* HUMIDIFIER

For All Types of Warm Air Furnaces

1. Evaporates MORE water with minimum of air flow restriction.
2. Water reservoir located away from heat of the furnace.
3. Non back-siphoning water feed valve fully approved by National Plumbing Laboratory.
4. Furnished complete with 6′ of copper tubing, saddle valve, fittings, and installation instructions.

An amazing device—fast in action—trouble-free in operation! Built in 2 types as shown; 12 sizes. Easily installed in any furnace with either straight or sloping plenum. Equipped with patented replaceable evaporator pads, and self-locking front plate—quickly serviced. Copper trough holds very small amount of water—rapid evaporation even with short firing cycles. Fully automatic. Entirely non-corrosive. Ideal for automatic installations.

★ ★ ★

PAN TYPE *Automatic* HUMIDIFIER

For Winter Air Conditioning Furnaces

Patented hinged wing construction greatly increases rate of evaporation—far more efficient than ordinary types. Bronze pan transfers heat more rapidly and withstands corrosion. Water line adjustable by means of thumb screw located on float valve. For installation in either straight or sloping plenum furnaces. Two sizes with 26″ and 36″ pans. Large size has heating area of over 33 sq. in.—sufficient to humidify up to 12,000 cu. ft. of space.

Furnished complete with necessary fittings and installation instructions.

Showing Patented Wing Deflectors and Pan Construction.

No. 51

MIDGET WATER-BOY FEEDER

Widely used to control water level in humidifiers, air conditioning equipment, evaporative coolers, air washers, etc. Easily adjustable as to water line. Takes very small space—only 7⅛″ long. Quickly installed by drilling only one hole. Capacity 1 qt. per minute at 50 lbs. pressure—maximum pressure, 75 lbs.

No. 52

HIGH-DUTY WATER-BOY FEEDER

Same general design as No. 51—but built with heavier and larger valve capacity. Recommended for pressures up to 125 lbs., handling 1½ gals. per minute at 75 lbs. pressure. Fully adjustable.

HIGH-DUTY BRACKET VALVE

No. 53

Same construction, same capacities, and for same services as High-Duty Water-Boy Feeder, No. 52. Only difference is vertical mounting of valve as shown. Overall length of valve 5⅛″.

★ ★ ★

WATER-BOY FEED VALVE With Adjustable Water Line

No. 5900F

Complete unit enabling you to convert any hand fed pan into an automatic humidifier. Easily and quickly installed. Equipped with non back-siphoning supply valve and float, adjustable for varying water pressures. Shipped complete with fittings and instructions.

MAID-O'-MIST, INC. . . . 3213 N. PULASKI RD. . . . CHICAGO 41, ILLINOIS

Figure EVERY oil heat job . . . with Petro!

YOU CAN ESTIMATE every oil heating job in town . . . from one-family houses to apartments . . . from bungalows to bakeries, laundries and even large manufacturing plants . . . with the PETRO line of oil-fired equipment. The PETRO line is complete. It lets you go after everything.

For homes and other light-duty domestic installations, you can offer pressure-atomizing PETRO models that burn from 1 to 18 gallons per hour of domestic fuels. For heavier commercial and industrial duty, choose from horizontal rotary cup models handling from 11 to 145 gallons per hour of heavy commercial oils.

PETRO burners, water heaters, and boiler- (or furnace-) burner units are distributed by established heating wholesalers. Write today for the name of the supplier nearest you.

PETRO
REG. U. S. PAT. OFF.

MAKERS OF GOOD OIL BURNING EQUIPMENT SINCE 1903

PETROLEUM HEAT AND POWER COMPANY • STAMFORD, CONNECTICUT

PETRO FUEL OIL BULK PLANTS, DISTRIBUTION TERMINALS AND FACILITIES IN: BOSTON • PROVIDENCE • STAMFORD MT. VERNON • NEW YORK • MINEOLA • NEWARK • PHILADELPHIA • BALTIMORE • WASHINGTON • CHICAGO

Save 3 ways with...

KRW ARBOR PRESSES

SAVE with KRW
HAND-OPERATED PRESSES

1

You name the job, and we'll name the KRW Press best fitted to do it better, faster, and at lower cost. Take KRW Hand-operated presses for example: they give more power with less effort...combining faster ram travel with a quick-acting finger controlled valve that makes the KRW Press outstanding in efficient hydraulic action. Twin pumps enable operator to vary ram speed. The special "Capstan" type handwheel brings the ram to the work fast as well as providing a "built-in" mechanical press for the lighter jobs. 30 days delivery guaranteed. Write for prices and catalog.

2

SAVE with KRW
AIR-OIL OPERATED PRESSES

KRW Hydraulic Presses equipped with our "Speedi-Booster" operate on compressed air, providing tons of pressure at the ram by effortlessly raising or lowering the operating lever. In operation, compressed air enters an air cylinder, the piston of which drives the smaller hydraulic oil piston which, in turn, forces the oil under pressure to the large cylinder piston. Tonnage pressures are dependent upon initial air pressure and size of air and oil cylinders. 30 days delivery.

SAVE with KRW
MOTOR DRIVEN PRESSES

3

Here is a self-contained power unit that drives KRW Hydraulic Presses. These units can be purchased separately to drive any existing KRW Press. The KRW Motor Driven Hydraulic Presses are low-cost, production units ideally suited for short runs or small work.

Presses are equipped with Seco Radial type pumps in capacities ranging from 3,000 to 10,000 PSI. Guaranteed by both the manufacturer and K. R. Wilson. Write for prices.

K. R. WILSON

MAIN ST., BUFFALO 3, N.Y.

K. R. Wilson, 215 Main St., Buffalo 3, N. Y.

Please send me information regarding

KRW Hand-operated Presses ☐

KRW Air-oil Operated Presses ☐

KRW Motor Driven Presses ☐

56

Name.....

Address.....

City..... *Zone*..... *State*.....

Since 19 years before the first Pacific railroad

AMERICANS HAVE RELIED ON THATCHER FURNACES

THERE was rejoicing from coast to coast back in 1869 when they hammered in the golden spike that at last tied Atlantic and Pacific together by rail. Now at last, Americans told each other, we're making *progress!*

But for nearly a generation before that—since 1850—Americans had been discovering the new and modern comfort of home-heating equipment by Thatcher. By 1869, hundreds of homeowners were already testifying to the dependability of their Thatcher Furnaces.

Today, 97 years later, still finer Thatcher Furnaces, Boilers and Air Conditioners are coming off the production line. Today, as for 96 years, you'll find *you* can count on Thatcher equipment and Thatcher service to the trade.

KEEP YOUR EYE ON THATCHER

Thatcher **FURNACE COMPANY**

Garwood, New Jersey

SPECIALISTS IN HEATING SINCE 1850

How far to the answer?

ONLY A MATTER OF FEET separates the Weirton specialists who bring their diverse talents to bear upon your steel problems. Metallurgists, production men, salesmen, shipping supervisors are all gathered within easy reach of one another "under one roof."

This centralization and coordination characterize all phases of Weirton's operations. And help to account for the unusual flexibility, versatility and speed of Weirton service.

The benefits of integrated operation extend to every steel that Weirton makes: Weirite hot-dip and electrolytic tin plate, Weirzin, Weircoloy, Weiralead, hot and cold rolled strip, cold rolled spring steel, cold rolled sheets, manufacturing and long ternes, structurals, N-A-X High-Tensile.

WEIRTON STEEL CO.

WEIRTON, W. VA. *Sales Offices in Principal Cities*

Division of NATIONAL STEEL CORPORATION

Executive Offices, Pittsburgh, Pa.

"smart move Mr. McWeather"

"You are making a wise decision when you expand your business to include sales and service of COOLING equipment! It is a natural, easy move for you to make. For *cooling* naturally belongs with *Heating* as a strong business-getting combination for you. And your customers will just as naturally welcome buying *both* from the same reliable dealer."

"Farsighted VIKING Dealers are leading this NATURAL trend. They are planning with their VIKING Distributors NOW, preparing to reap full advantage from a rapidly growing year-round market for VIKING'S complete heating, cooling and air conditioning lines. If you are interested in STEADY PROFITS *Twelve Months in the year,* may we suggest that you "Go and do likewise." Write today for your VIKING Distributor's name and address.

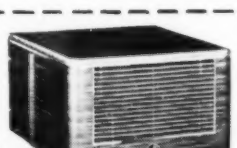
THE VIKING MFG. CORPORATION

1747 Chester Avenue — Cleveland 14, Ohio

VIKING'S Cooling Line includes automatic year round Air Conditioning systems, (oil or gas fired, with cooling by refrigeration) for winter and summer comfort control — Automatic plug-in Room Coolers — Console and Window types, for homes, offices, hotels and institutions — Reach-in Refrigerators for clubs, restaurants, etc., and Commercial Refrigeration Compressor Units for replacement sale.

Year round Air Conditioning System

Console Room Cooler



Window Type Room Cooler

—WARM IN WINTER—COOL IN SUMMER—

VIKING

Year round Air Conditioners

Floor Furnaces

Boilers

Oil Furnaces

Room Coolers

Domestic Stokers

Conversion Burners

Water Heaters

Space Heaters

GENERAL CONTROLS' branch and agency sales and service offices are located in principal cities. Their adequate facilities, the experience and skilled counsel of their personnel are as conveniently near to you as your telephone.

Of equal importance—when you are considering automatic temperature, pressure and flow controls—is that General Controls are *good* products, engineered right, built right, proved by performance. We are in the automatic controls business. Our business *is* controls and thousands will tell you that we *know* our business.

There are talking points about General Controls' engineering and field service that should benefit you... as they are benefiting others in your line of business. A wire, letter or telephone call (see yellow classified section of principal city telephone directories) will bring a qualified Controls Engineer to your office.

FOR COMPLETE SPECIFICATIONS request new Catalog and Service and Instruction Manuals.

36-1

GENERAL CONTROLS

801 ALLEN AVENUE GLENDALE 1, CALIF.

Manufacturers of Automatic Pressure, Temperature & Flow Controls

FACTORY BRANCHES: PHILADELPHIA • ATLANTA • BOSTON • CHICAGO • DALLAS
KANSAS CITY • NEW YORK • DENVER • DETROIT • CLEVELAND • PITTSBURGH
HOUSTON • SEATTLE • SAN FRANCISCO • DISTRIBUTORS IN PRINCIPAL CITIES

THIS Luxaire "YEARS AHEAD" FEATURE

MEANS *Easy Installation -Easy Servicing*

Two jobs in heating installations—the original set-up and later servicing—are easy with this Luxaire "Years Ahead" feature which is incorporated in many of the largest selling Luxaire units.

The completely assembled heating element can be placed *as a unit* in the cabinet when the heating system is installed and likewise is just as easily removed as a complete unit without disturbing cabinet or duct work should servicing be necessary.

This is just one of the many Luxaire "Years Ahead" features which make Luxaire the "profit line" of heating equipment.

Series A
Gas-Fired, Steel
Air Conditioning Unit

Series G
Gas-Fired, Steel
Gravity Furnace

Series H
Gas-Fired, Utility Steel
Air Conditioning Unit

Series O
Oil-Fired, Steel
Air Conditioning Unit

Series AC-700
Coal-Fired, Steel
Air Conditioning Unit

Series 700
Coal-Fired, Steel
Gravity Furnace

Series C
Coal-Fired, Cast
Gravity Furnace

THE C·A·OLSEN MANUFACTURING COMPANY

Luxaire HEATING & AIR CONDITIONING UNITS

ELYRIA, OHIO

TESTED

....every single one of them....

Too often float valves are simply assembled and shipped. As they say in the business, "The manufacturer doesn't even get 'em wet!" But that is emphatically not true of the McDonnell float valve for humidifier pans. Every single one is given an exhaustive test as illustrated here. Its feeding action is tested; its ability to close tight against water pressure up to 150 lbs. is tested.

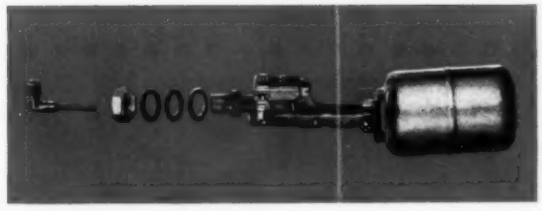
Important though it is, this thorough, individual testing is simply the final step in turning out a valve that marks the difference between just a float valve and a real water level control. In the McDonnell Humidifier Valve you have a valve designed to cope with the heat, scale, mud and silt found in humidifier pans. The McDonnell "snap action" does the trick. When the float drops ¼ inch, a cam mechanism snaps the valve wide open. This flushes the valve and orifice clean. Contrast this with the sluggish, dribbling action of the ordinary slow-cracking float valve.

In this control you also have a valve that will seal tight against city pressure up to 150 lbs. No reducing valve is ever needed as with conventional types. The same mechanism that snaps it wide open, closes it with the same snap to a real, water-tight seal.

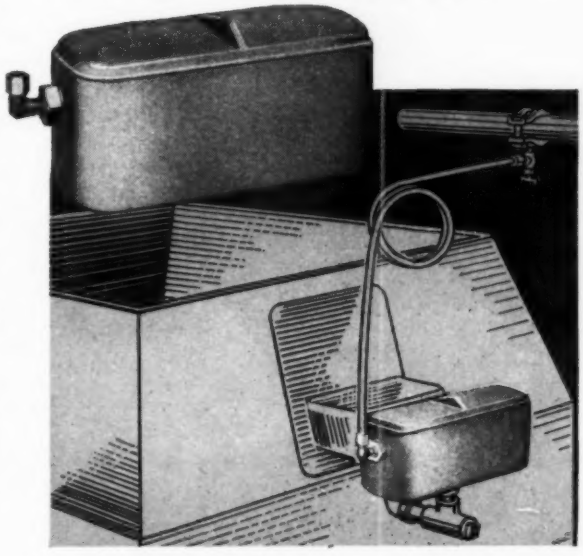
Although this valve has been better from the start we have never stopped improving it. It now has, as standard equipment, a special monel strainer mounted in a special, machined compression elbow. Experience with thousands of these valves during the war showed the way to further refinements in construction. In this snap-action valve you have a real water level control for any type of furnace, and it is now available on a reasonably prompt delivery schedule.

McDONNELL & MILLER, INC.
1318 Wrigley Bldg., Chicago 11, Ill.

Doing One Thing Well
REG. U. S. PAT. OFF.



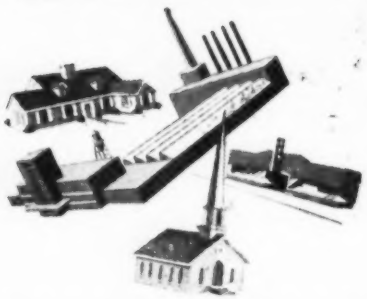
McDONNELL NO. 417 Snap Action Valve for installation in existing pan, or float chamber, or for use by furnace manufacturers as original equipment.



McDONNELL NO. 517 consists of the No. 417 Valve, illustrated above, installed in substantial die-cast float chamber with matching cover, complete with strainer and compression fitting. (Tubing is not included.)

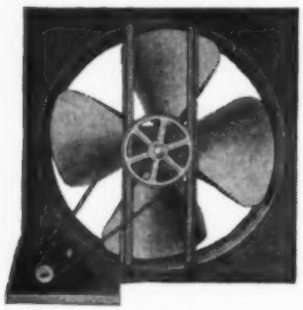
McDONNELL *Snap Action* FLOAT VALVE

Let this Unbeatable Silent Breeze Combination Boost Your Appliance Profits!



A rich market!

Ventilating fan sales in 1946 were *twice* what they were in '45. Demand for healthful, comfortable ventilation—in homes, stores, factories and public buildings—is growing greater every day. Already, it has created a major, high-profit market right in your own back yard!



A proved product!

Noiseless, completely automatic *Silent Breeze* Ventilating Fans are ruggedly built by a long-established manufacturer . . . are performance-proved in thousands of installations. They provide summer-time comfort-cooling for the whole house or place of business in a matter of minutes . . . keep the air fresh as June all winter long!

A powerful selling program!

Silent Breeze Deferred Payment Plan enables customers to "order today, start payments in May." Dealer newspaper advertising campaigns promote winter and summer selling. Nationally advertised in leading magazines the year around. Variety of sales promotional aids and comprehensive, 48-page Selection and Installation Manual furnished every dealer.

The market is ripe, the product is right and the sales program is ready! Together, they comprise an unbeatable combination that assures you of increased appliance profits all year long. So act now . . . write or wire today for full information on *Silent Breeze* Ventilating Fans!

HOLCOMB & HOKE MFG. CO., INC.
1543 Van Buren Street • Indianapolis 7, Indiana

Silent Breeze
VENTILATING FANS
VENTILATION PLUS COOLING WITH AIR IN MOTION

In addition to MORE-PROFITS ... MOR-SUN gives you

a planned

MERCHANDISING PROGRAM!

Sales Manual
FOR MERCHANDISERS OF WARM AIR FURNACES
THE ATTRIBUTES OF A SALESMAN
MOR-SUN Pressed Steel AIR CONDITIONING
THE RUGGED SIMPLICITY OF the MOR-SUN FURNACE

The warm air-conditioning MOR-SUN pressed steel furnace gives you more than beauty and BTU'S . . .

MOR-SUN gives you a complete merchandising program for MORE-PROFITS . . . planned to increase your present business and insure your profitable future . . . The MOR-SUN program is a down-to-earth manufacturer-dealer relationship based on actual field conditions . . . complete dealer training and sales aids, sales bulletins, consumer literature, national advertising beamed to architects and builders and consumers . . .

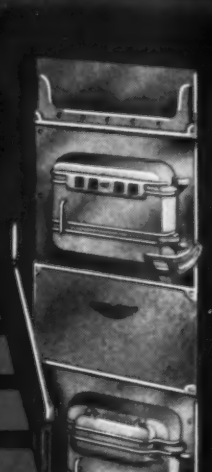
You . . . and your customers . . . get MORE in a MOR-SUN!

"The Sun Never Sets with MOR-SUN!"

MORRISON STEEL PRODUCTS, Inc., BUFFALO 7, N. Y.

what "Line" to sell in '47?

1. The Line Famous for Exclusive FINS.
2. The Line That Takes You Out of the Competitive Class.
3. The Line That Sells Easier Because You Can DEMONSTRATE its Superiority.
4. The Line That is COMPLETE.
5. The Line That Makes You More Money!



SELL VICTOR

WITH HEAT RADIATING FINS

TABLE-TOP FIN DEMONSTRATOR SELLS VICTOR FOR YOU

Twin thermometers prove, before your prospect's eyes, how VICTOR FINS give more heat from the same amount of fire. It is a simple, fool-proof demonstration. It is honest. It closes sales—FAST!

"VICTOR", the furnace with the exclusive, patented HEAT RADIATING FINS, famous since 1890, provides you with sales features which lift you out of the competitive class. You have something more than just a furnace to offer prospects. You are introducing them to greater heating satisfaction and economy. The miniature, table-top furnace demonstrates, dramatically, the *extra* heat provided by VICTOR FINS. It closes sales for you—FAST.

There is no substitute for experience, quality and craftsmanship. The complete VICTOR line will make you more money in '47.

Write us today!

Increased production is permitting us to take on additional accounts. Write us about the VICTOR line.

FURNACES • OIL BURNERS • GAS BURNERS • STOKERS • BLOWERS • ACCESSORIES

HALL-NEAL FURNACE CO.

VICTOR *Quality Furnaces Since 1890*

1322 N. CAPITOL AVENUE · INDIANAPOLIS 7, INDIANA

46 · 1947 · 1948 · 1949 · 19

5 · 1954 · 19

5 · 9

Years of Building call for BETTER HEATING

"DETROIT" CRC 246

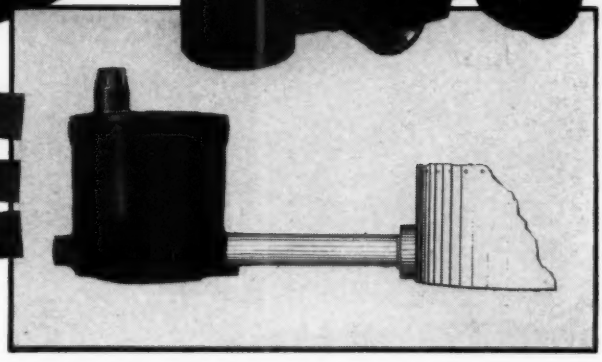
The Revolutionary New OIL HEATER CONTROL

ADVANCED IN PRINCIPLE

SIMPLER IN APPLICATION

IMPROVED IN APPEARANCE

SUPERIOR IN PERFORMANCE



Conservative estimates indicate that it will be 5 to 10 years before we catch up on residential building. Homes must be built by the million.

People want the cleanliness and reliability of oil heat.

The best way to give it to them is with space heaters, furnaces, ranges, water heaters, etc., equipped with "Detroit" Float Valves.

The CRC 246 Float Valve is a giant stride forward in control of fuel supply to vaporizing burners. Some of its advantages are listed below:

- **Connects directly to burner nipple. Eliminates tee, fittings, and tubing.**
- **Can be tilted without affecting fuel flow. Leveling by eye is satisfactory.**
- **Flow rate to burner constant with inlet heads from 2 inches to 84 inches. Permits placing bottom of tank flush with top of valve and eliminates "dying fire" when fuel supply is low.**
- **Safety mechanism trips from level of fuel in burner as well as level in valve. Less pooling of fuel in burner if fire is extinguished.**
- **Magnetic trip mechanism is positive. Will not trip from vibration.**
- **Low flows are extremely accurate and consistent.**
- **Fully temperature-compensated. Uniform fuel flow regardless of fuel temperature.**
- **Simpler to service.**

DETROIT LUBRICATOR COMPANY *General Offices:* **5900 TRUMBULL AVENUE DETROIT 8, MICHIGAN**

Division of AMERICAN RADIATOR & Standard Sanitary CORPORATION

Canadian Representatives — RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

"DETROIT"

"Detroit" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • "Detroit" Expansion Valves and Refrigeration Accessories • Stationary and Locomotive Lubricators

PORTRAIT OF A SHEET METAL CONTRACTOR ON VELVET

Char-Gale aluminum fittings put him there. Here's how:

He pays no more than for fittings of other types. But he gets *aluminum.* And so:

The fittings are light. His freight charges are lower than ever before. Aluminum is like that.

They are pre-fabricated. The ready-formed sections fit so neatly and easily together that he saves hours of shop time. More velvet.

Fitted together, they're still light. Actual installation time and costs are down; his crew handles more jobs in less time.

And—his customers like the handsome aluminum fittings and tell all their friends of the smart contractor who did such a wonderful job on their home. And *that* is velvet, too.

Like a little velvet for yourself? Say, "Char-Gale" to your jobber.

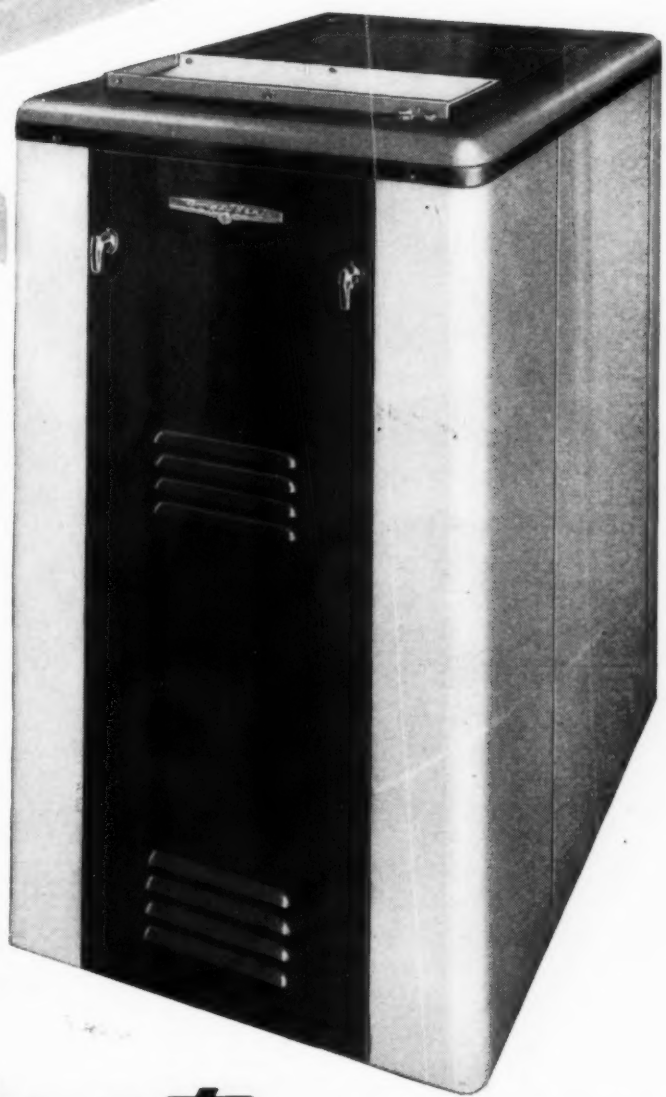
PREFABRICATED DUCTS AND FITTINGS FOR WARM AIR HEATING

CHAR-GALE

MINNEAPOLIS, MINNESOTA **CHAR-GALE MFG. CO.** **OMAHA, NEBRASKA**

PROVED!

—EASIER TO INSTALL



Easier to install? Yes! And quicker! And cheaper! More reasons for the *extra* profits that dealers are pocketing from sales of these new oil-burning winter air-conditioning furnaces.

Why easier, quicker and cheaper to install? . . . The completely assembled power unit helps. So does factory-wiring and testing. Also the minimum of moving parts. And the perfect fit of every piece. Then the new design is so simple that experience and strength aren't needed to assemble this sensational new unit.

Some other features for bigger dealer profits are: the Vacuum-Draft . . . "Whirlator" combustion head . . . stainless steel combustion chamber . . . single motor . . . horizontal fire tunnel . . . 17-foot flue ramp . . . inverted flue outlet . . . and centralized, visible servicing, including lubrication.

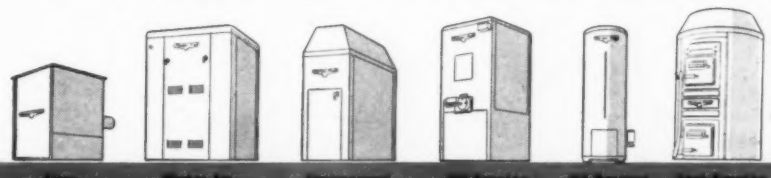
There are also definite reasons why dealers clear bigger profits on all other Norge-Heat furnaces and water heaters now coming off the production lines.

You are invited to see the money-making features on display in Booth 39 at the National Association of Home Builders, Stevens Hotel, Chicago, February 23-27

CONTROLLED · COMBUSTION

Norge Heat

Division of Borg-Warner Corporation • 574 East Woodbridge Ave., Detroit 26



Floor Furnaces | Winter Air-Conditioners | Replacement Units | Oil-Burning Furnaces | Oil-Burning Water Heaters | Gas-Burning Furnaces

ENGINEERING B-W PRODUCTION

SEE NORGE BEFORE YOU BUY

Largest Hotel in the British Empire

ROOFED WITH COPPER

THE LUXURIOUS ROYAL YORK HOTEL in Toronto, Canada,—the largest hotel in the British Empire—is roofed with copper. Approximately thirty-five tons of copper were used for the roofing, ornamental coping and flashing. Since 1929, when the hotel was completed, only minor roof repairs have been required. Recently a thorough examination of this fine roofing installation showed that the copper was in first class condition.

Anaconda Copper has been a favorite roofing material with architects and builders for many years. Easy to install and maintain, it provides long-term protection for many fine buildings throughout the continent. 4750

ANACONDA
from mine to consumer

Anaconda
COPPER

THE AMERICAN BRASS COMPANY
General Offices: Waterbury 88, Connecticut
Subsidiary of Anaconda Copper Mining Company
In Canada: ANACONDA AMERICAN BRASS LTD.
New Toronto, Ont.

The Canadian Pacific Railway's 1200-room Royal York Hotel in Toronto, Canada, has been protected by copper roofing since its completion in 1929. Architects: Ross and MacDonald, Montreal and Sproatt and Rolph, Toronto. General contractors: Anglin-Norcross Ontario Limited. Copper installation by The A. B. Ormsby Co. Limited, Toronto.

OFFERS

NEW BEAUTY, NEW ENGINEERING

Just look at these smart, trim lines . . . . they snap up the appearance of any basement. Two-tone green opalescent baked-on enamel finish. Bright aluminum trim makes the new, shorter extension outside the furnace appear even smaller. And inside — it's a serviceman's dream come true. All controls are housed in one casing easy-to-get-at. The entire control assembly can be removed in a jiffy without disturbing the venturi or burner assembly. New secondary air adjustment is tamper-proof. New control platform is modern, heavy gauge. New burner height adjustment makes installation as simple as ABC.

PLUS

THESE PROVEN NORMAN ADVANTAGES

The exclusive Norman single-port, self-piloting, flame retention type burner is a proven profit feature. This improved principle of burning gas has been successfully tested in thousands of heating plants. It permits greater flexibility and ease of installation. And this adds up to more profits. Telescopic burner tube provides quick centering in varying size firepots . . . adjustable rear support permits fast leveling . . . orifice holder enables quick change of orifice size to vary input . . . two size burners cover entire range from 50,000 to 300,000 BTU per hour for natural or mixed gas — three sizes for manufactured gas.

DEALERS! DISTRIBUTORS! It will pay you to get the complete details now about the Complete Norman Line of Conversion Gas Burners, Gravity Furnaces, Winter Air Conditioners, Unit Heaters, Boilers and Hot Water Heaters. Dealerships in attractive territories are still available. A few distributor territories in Western and Southern States are still open. Wire or write for information today.

Norman
PRODUCTS COMPANY

E. A. NORMAN, Jr., *President*
D. D. PIPER, *Secretary, Treasurer*

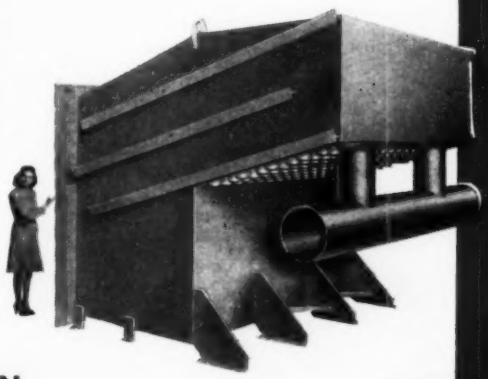
1150 CHESAPEAKE AVENUE COLUMBUS 8, OHIO

When you hear...

*"CRESCENT" is our trade mark in the United States and foreign countries for wrenches and other tools. "Crescent" tools are made only by Crescent Tool Company of Jamestown, N.Y.

Big Installations

The bigger the heating job, the greater the profit. And your opportunities of securing big installations are greater if you handle J & C Power Heaters. With J & C units you can offer owners of bowling alleys, stores, garages, schools, churches, apartments, and other large buildings all the advantages of a custom-built heating plant at the comparatively low cost of a production-made furnace. For example, the J & C direct radiation surface captures more usable heat from the flames and throws it off for circulation by a smooth, quiet forced air system. There's ample humidity control that adds greatly to indoor comfort. There's one-piece welded construction of high quality steel that assures a gas-tight, leak-proof unit. You are in position to quote on practically any heating installation, large or small, because J & C Power Heaters are made to produce from 160,000 to 3,200,000 Btu and may be gas, oil, or coal fired. Get the facts from your J & C distributor . . . specify J & C Power Heaters—and you'll have a head-start on the big installations and the big profit that goes with them.



A PRODUCT OF J&C

JACKSON & CHURCH CO. • SAGINAW, MICHIGAN

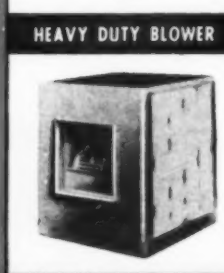
MEMBER INDOOR COMFORT

Jackpot...

Utility's line gives every dealer a big payoff... Highly salable modern design... Top performance and long life... Helpful sales and installation material.

HEAVY DUTY BLOWER

FORCED AIR FURNACE


AIR COOLER

PROPELLER FAN

BLOWERS

FLOOR FURNACE

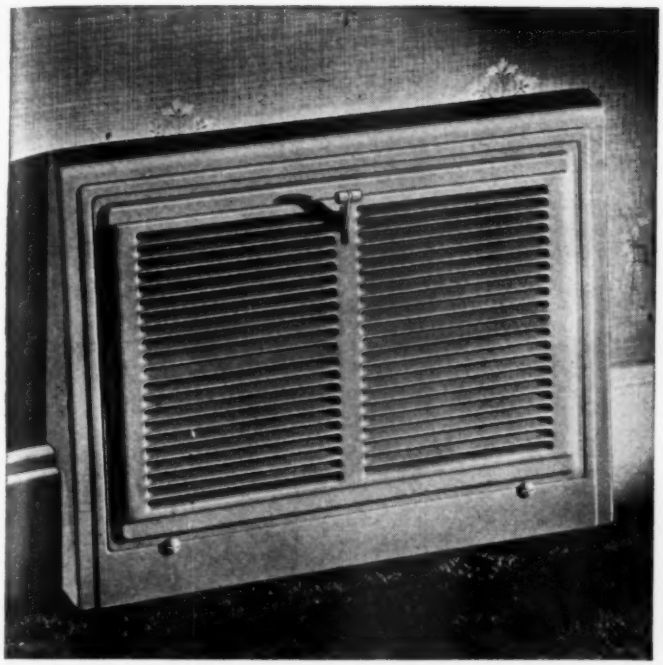
Three bells for everyone and no lemons in this line. Write for complete information and prices.

UTILITY APPLIANCE CORP.

4851 S. Alameda St., Los Angeles 11, California

UTILITY

DIVISIONS { UTILITY FAN CORPORATION
GAFFERS & SATTLER
OCCIDENTAL STOVE CO.



AUER HEAT·RITE REGISTERS *for Gravity Jobs*

Compare this smart modern design with registers costing more money—and you see the reason for its popularity. One of the best selling models ever produced by Auer, it embodies high efficiency and fine appearance in a warm air register. It has generous open area, and bendable fins for upward, level or downward direction. This is a two-piece design with removable face, and makes an easy, neat, tight installation. Equipped with Auer exclusive patented spring tension deflector adjustment, permanently non-slipping and positive. This streamlined register is available in types for baseboard or wall position, and also for intakes.

You will find that the Heat-Rite, though moderate in cost, is suitable for your *good* jobs, because it is a well made, substantial, nicely finished product.

● Ask for Auer Register Book showing all models for air conditioning and warm air. Special Grille Catalog also sent on request.

THE AUER REGISTER CO. 3608 Payne Ave. Cleveland 14, Ohio

Auer REGISTERS
& GRILLES *for* AIR CONDITIONING & GRAVITY

Fast to work... slow to rust

Beth-Cu-Loy GALVANIZED Steel Sheets

In selecting steel sheets your first consideration is their workability. Can they be formed smoothly, cut readily and soldered easily to do a top-grade job in the shortest possible time? With Beth-Cu-Loy Galvanized Sheets the answer is yes. Sheet-metal contractors find in them the uniformity and ductility needed for clean, rapid work.

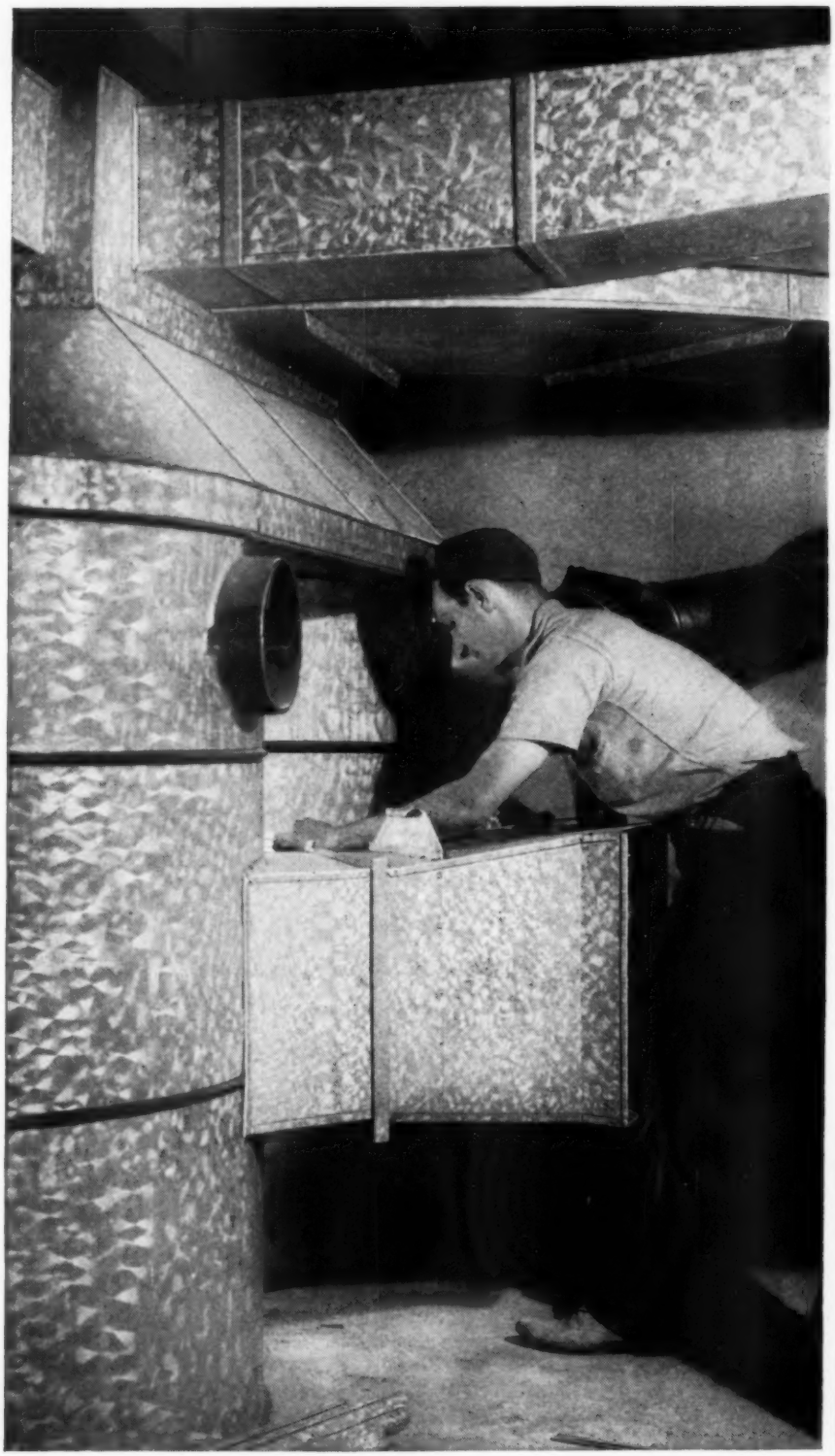
Your next concern in selecting sheets is their resistance to rust. Home owners and other customers expect sheet-metal work to stand up well against corrosion. Give them jobs that last and you get customer goodwill in return.

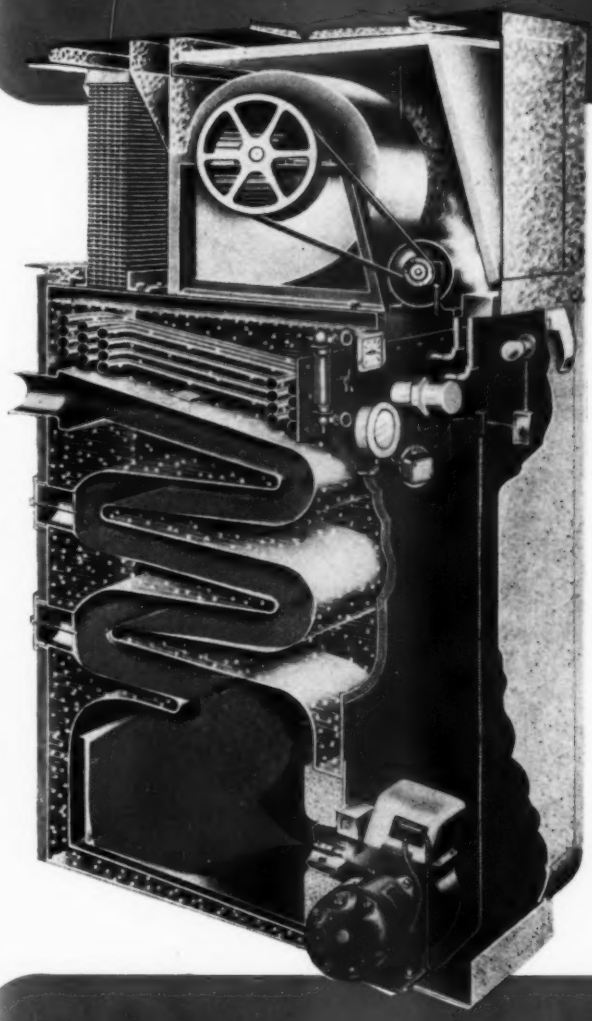
Beth-Cu-Loy Galvanized Sheets have the corrosion-resistance that assures longer life for ductwork, window frames, cornices and similar installations. These sheets are protected on the surface by a bright coating of Prime Western zinc and under the surface by a base of copper-bearing steel with from 2 to 2½ times the rust-resistance of plain carbon steel.

Bethlehem Steel Company, Bethlehem, Pa.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

★ BETHLEHEM STEEL ★





Do you think of split-system heating as a high-priced luxury that's saleable only to a limited, "millionaire's" market? Then—let us introduce you to the Penn Packaged Heat Vaporair!

The Vaporair takes the yacht-owner price tag off the split system and puts it within easy reach of the big-volume automatic heat market. This unique "package" permits the use of both steam and warm air heat in one system—yet sells at a price no higher than that of good "straight" warm air units!

The Vaporair is Penn Packaged Heat. That means it's part of the only line of oil-burning boilers delivered to you with controls, burner and circulator mounted at the factory. Basement engineering is eliminated . . . savings in installation time usually amount to a full day's work or more.

And—here's a big plus. The Vaporair not only supplies split system heat—the same package also provides a year round supply of automatic, instant hot water. This hot water is furnished by the unit itself—there's no need to install additional equipment. A lot of customers for automatic heat are going to turn to Vaporair because it is the first unit to offer them a combination of (1) split system heat; (2) moderate price; (3) automatic hot water. Write today for the new Penn Vaporair specification sheets.

THE PACKAGED HEAT VAPORAIR

Export Office
60 Broad Street
New York 4, N. Y.

Canadian Distributor
R. G. DIBBLE COMPANY
Toronto, Canada

Canadian Distributor
ACTRITE EQUIPMENT COMPANY
760 St. Paul St., West, Montreal 3, Canada

PENN BOILER and BURNER MFG. CORP.
LANCASTER, PENNSYLVANIA

Make MONCRIEF Your HEADQUARTERS For Heating Equipment

The Finest **Automatic Heating and Air Conditioning Units**

Series L
Gas-Fired, Steel
Air Conditioning
Unit

Series W
Gas-Fired, Steel
Gravity Furnace

Series U
Gas-Fired, Steel
Utility Air Conditioning Unit

Series P
Oil-Fired, Steel
Air Conditioning
Unit

Series AC-700
Coal-Fired, Steel
Air Conditioning
Unit

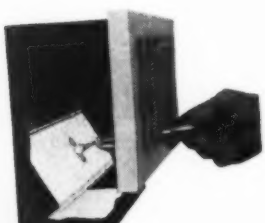
Series 700
Coal-Fired, Steel
Gravity Furnace

Series C
Coal-Fired, Cast
Gravity Furnace

MAYN AIR Stackhead Dampers

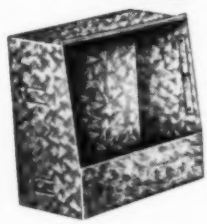
The time-saving, money-saving dampers for balancing forced air heating systems.

- ★ One man balances the job.
- ★ Only 3 sheet-metal screws necessary.
- ★ Locks automatically.
- ★ Noiseless and fool-proof.



MONCRIEF Surefit Fittings

With this complete line of die-stamped, machine-made furnace fittings you get streamlined production that cuts hours from heating installations—saves money—increases profits—because Moncrief fittings—fit.



THE HENRY FURNACE COMPANY • *Medina, Ohio*

HEATING AND AIR CONDITIONING UNITS — MONCRIEF SINCE 1895 — FURNACE PIPE AND FITTINGS

General FUEL OIL FILTERS

THE HOTTEST ITEM IN THE FUEL OIL BUSINESS

GENERAL FILTER IS THE 5-STAR LEADER IN THE FUEL OIL BUSINESS

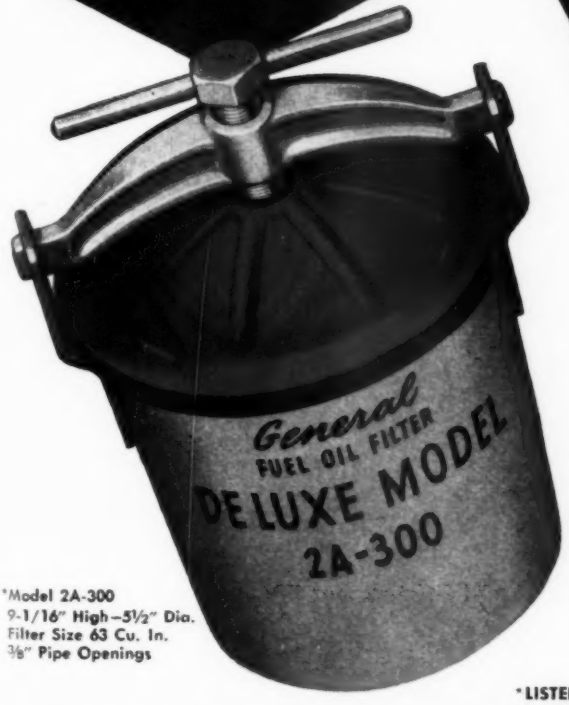
STANDARD MODEL 1A-25
IDEAL FOR SMALL HOMES, SPACE HEATERS AND HOT WATER HEATERS

*Model 1A-25
4¾" High—3½" Dia.
Filter Unit Surface 31 Sq. In.
⅜" Pipe Openings

MASTER MODEL 2A-700
ADEQUATE CAPACITY FOR AVERAGE SIZE AND LARGE HOMES

Model 2A-700
6¼" High—4-5/16" Dia.
Filter Unit Surface 72 Sq. In.
⅜" Pipe Openings

DELUXE MODEL 2A-300
JUMBO SIZE FOR LARGE SYSTEMS AND DIRTY TANKS



*Model 2A-300
9-1/16" High—5½" Dia.
Filter Size 63 Cu. In.
⅜" Pipe Openings

WHEREVER FUEL OIL IS USED INSTALL A *General*

Service companies from coast to coast are proving that General Fuel Oil Filters are the most needed and outstanding accessory ever offered in the fuel oil burner field. Every installation is a proven profit maker. Every installation means added, periodic revenue through cartridge replacements. Service companies and contractors further add that they save thousands of dollars each year by avoiding troublesome call-backs caused by clogged nozzles.

Not all the benefit and profit is on the contractor's side — the customer gets cleaner burning fuel and is not inconvenienced by shut-downs caused by clogged burners. These facts make General Filters easy to sell and easy to increase profits — a good reason to *install a General wherever fuel oil is used!*

*LISTED UNDER RE-EXAMINATION SERVICE OF UNDERWRITERS' LABORATORIES

GENERAL FILTERS INCORPORATED — GENERAL FUEL OIL FILTER — 12890 WESTWOOD AVE. DETROIT 23, MICHIGAN

CANADIAN FACTORY BRANCH: GENERAL FILTERS CANADA, 1227 ST. CLAIR • TORONTO, ONTARIO

FACTORY REPRESENTATIVES: William J. Debler & Sons, Phila., Pa. and Brookline, Mass. . . . V. B. Kathe, Vancouver, Wash. . . . Western Sales Company, San Francisco, Calif. . . . W. V. Nuttall Company, Salt Lake City, Utah . . . E. R. Pauline & Son, Des Moines, Iowa . . . L. E. Schulein Company, Chicago, Illinois . . . Geo. H. & F. Wm. Granse, St. Paul, Minn. . . . Richard Barthelmess Sales Company, Jacksonville, Fla.

A Valuable Book

for

EVERY MANUFACTURER OF ORIGINAL EQUIPMENT

Interested in....

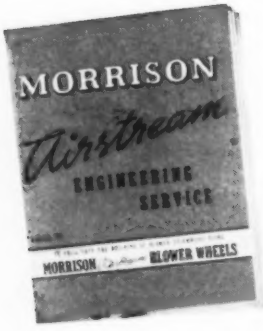
Blower Assemblies

THE MORRISON PLAN
MORRISON
Airstream
BLOWER WHEELS
DOUBLE WIDTH · DOUBLE INLET · ARE MANUFACTURED EXCLUSIVELY FOR THE BUILDING OF BLOWER ASSEMBLIES BY ORIGINAL EQUIPMENT MANUFACTURERS

Chock full of Important Tables, Charts, and Drawings, with other valuable data. It shows you why you can cut your production costs, make a superior product . . . *and Save Money by using . . .*

MORRISON

BLOWER WHEELS



☆

Ask also for your copy of "MORRISON Engineering Service." ***It shows to what extent we cooperate with Original Equipment Manufacturers.***

MORRISON PRODUCTS, INC.

EAST 168th and WATERLOO ROAD CLEVELAND 10, OHIO

Tomorrow
IS ALMOST HERE . . .

Combining BEAUTY . . . EFFICIENCY . . . ECONOMY . . .

It won't be long now! Tomorrow—with its new designs for comfortable living—is almost here! Nu-Way designers and engineers have been hard at work at their drafting boards and in their laboratories creating for you a new line of Nu-Way oil burners which will combine beauty, efficiency and economy

Watch for the new Nu-Way automatic oil heating units. They're worth waiting for!

THE **Nu-Way** CORPORATION

QUALITY OIL BURNERS SINCE 1921

SERVING DISTRIBUTORS, FURNACE AND BOILER MANUFACTURERS

ROCK ISLAND, ILLINOIS, U. S. A.

CHECK THE FACTS and you'll find . . .

AGAIN Oil-O-Matic dealers get the jump on competition! This time it's Oil-O-Matic's Preferred Purchaser Agreement—a new merchandising plan that enables Oil-O-Matic dealers to know exactly "where they are" . . . "where they are going" . . . and "how to get there".

With it, Oil-O-Matic dealers *measure* their market, *hold* their really worthwhile prospects, *build* consumer good will, *eliminate* time-consuming call-backs, and *speed up* operations. And when advertising, planned selling aids and follow-up start spreading the benefits of the PPA to the public, the volume of new "*pinned down*" business that will be opened up for Oil-O-Matic dealers will be something to exult about.

Oil-O-Matic's timely Preferred Purchaser Agreement and the program behind it is designed to take advantage of an unusual situation that has never existed before and may never exist again. Even more important to forward-looking dealers is the fact that, *no matter what the conditions may be, Oil-O-Matic is always first with an organized plan to help its dealers meet those conditions.*

WILLIAMS OIL-O-MATIC DIVISION, Eureka Williams Corporation, BLOOMINGTON, ILLINOIS

The *tireless twins* provide *effortless* heating comfort

Operating 'round the clock, day and night, the Perfex Tireless Twins are silent dependable servants that make Automatic Heating *effortless* — that make for *true* comfort . . . Automatic heating is the only modern home equipment that provides complete freedom from physical effort . . . the ultimate in convenience not found in automatic washing machines, dishwashers, vacuum cleaners, or any other home equipment. On the finest automatic heating systems, you will find Twin Contact Controls providing the utmost in comfort, safety and convenience . . . reasons why more and more leading manufacturers pre-select them to bear their trade mark names.

PERFEX CORPORATION, MILWAUKEE 7, WIS. • Perfex Controls Ltd., Toronto 1, Ont.

PERFEX

TWIN CONTACT CONTROLS

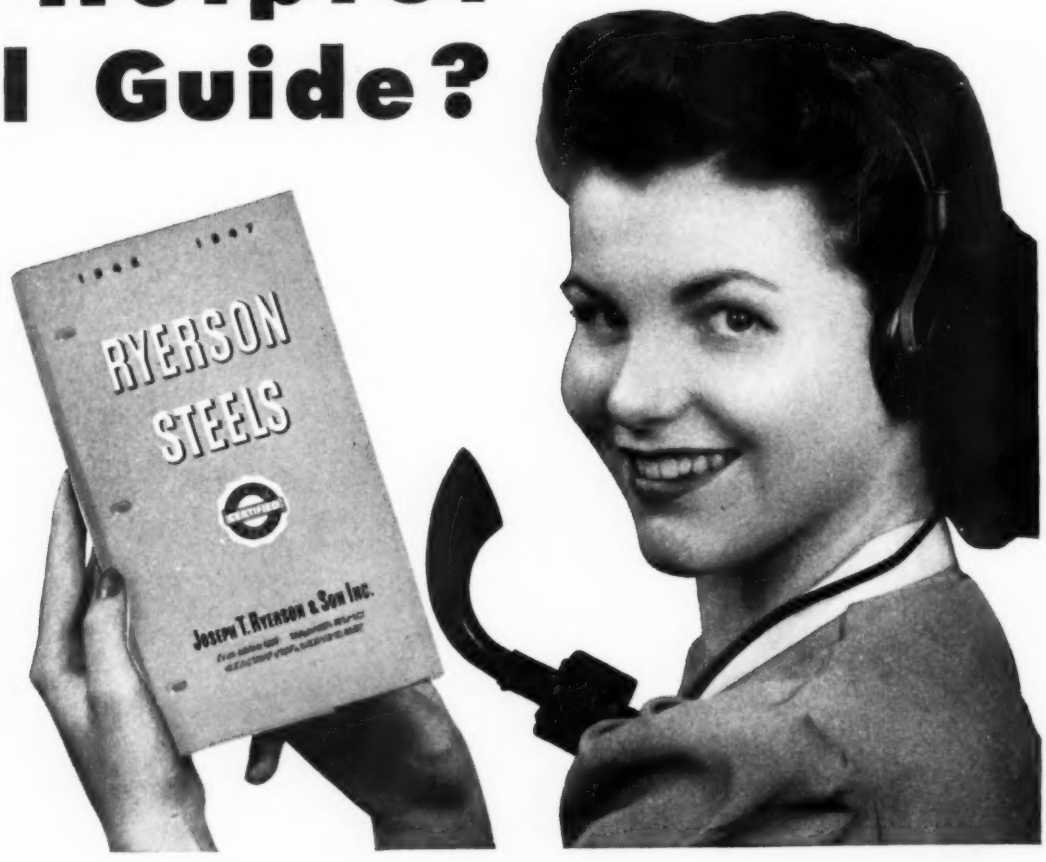
MANUFACTURERS OF AUTOMATIC CONTROLS BEARING THE TRADE MARK NAMES OF LEADING PRODUCERS OF AUTOMATIC HEATING SYSTEMS AND APPLIANCES

MAGIC DIAL
ELECTRIC CLOCK THERMOSTAT
OUTSTANDING FEATURES

- Temperature adjustments easily made without removing cover.
- Both Clock and Thermostat use low voltage wiring that's simple, safe and low in cost.
- 0 to 15° night setback is possible.
- Easy to install with convenient wall plate mounting.
- Clock is self-starting synchronous type.

ORTLESS AUTOMATIC HEAT DOES THE JOB COMPLETE

Are You Using this Helpful Steel Guide?



Complete Stock List and Buying Data for Reference when You Call . . .

Complete information on Ryerson Steel—detailed listing of more than 10,000 kinds, shapes and sizes—ready for your steel buying convenience in the new Ryerson Stock List and Data Book. Also included are pages of time-saving informative data on Average Physical Properties, AISI and SAE Standard Steel Compositions and a wealth of other facts and figures. The book is cataloged to simplify the work of purchasing men, metallurgists, engineers—everyone who specifies, buys or works with steel.

All sizes listed are not always in stock, because of the great demand, but Ryerson continues to carry the country's largest stocks. With the Ryerson Stock List to guide you, one call, one order, one shipment, will often cover a varied group of steel needs.

Copies of the current 1947 edition have been widely distributed, but if you do not have one, contact the Ryerson plant nearest you. And be sure to check Ryerson for all steel requirements. If the exact steel you need is not in stock our experienced staff will be glad to suggest a practical alternate.

Joseph T. Ryerson & Son, Inc. Steel-Service Plants at: New York, Boston, Philadelphia, Detroit, Cincinnati, Cleveland, Pittsburgh, Buffalo, Chicago, Milwaukee, St. Louis, Los Angeles.

RYERSON STEEL

AMERICAN ARTISAN

RESIDENTIAL
AIR CONDITIONING
WARM AIR HEATING
SHEET METAL CONTRACTING

The Black and Galvanized Sheet Situation

WITHOUT much question the black and galvan- sheet situation today is more acute—and sheets are more difficult to get—than at any time in the last twenty years. Things were tough enough during the war, but now there is no help to be had from government—no priorities to be invoked—no special preference to be found—so the situation boils down to about this—every man for himself, with success to the man who exercises the most persistence and aggressiveness.

In the last month, some facts have come to light. Not that these facts are helpful in getting sheets, but only that they furnish some feeble light with which to plan.

First of all, the producers and suppliers of sheets express the belief that many of the fantastic tales now making the rounds describing "black market" transactions are just so much hog wash and can't be traced down. True or not, it would seem there must be some fire with so much smoke for the tales being related are legion.

As to "black market" availability, it certainly is true that many metropolitan newspapers are carrying classified and display advertisements offering all kinds of sheet at prices from 12 to 20 cents per pound in the range of gauges used in our industry. How this material gets into "black market" channels is the $64 question of the moment.

At a recent meeting in Chicago called by the Board of Directors and the Trade Relations Committee of the Sheet Metal Contractors National Association, several large Chicago jobber representatives furnished these facts:

(1) Because of strikes last year there just won't be enough black and galvanized to meet the demand in the first quarter of this year.

(2) The chances of supply equaling demand in the second quarter are also mighty doubtful.

(3) Priorities for housing issued last year and remaining usable during the first quarter are likely to require much first quarter production.

(4) Light gauge sheet, especially galvanized, for our industry used to come largely from non-integrated mills—these mills are not now getting sheet bar so they are not producing to capacity.

(5) A number of these same independent mills have been bought by large corporations and their production is now going exclusively to the new owners and not to our industry or our jobbers.

(6) All mills are lacking scrap. Too many scrap dealers are holding their scrap for higher prices or selling the scrap to mills not supplying our trade so two things are needed:

(a) our industry should collect every pound of scrap,

(b) our scrap should be sold only to scrap dealers who will agree to sell to mills supplying our trade.

(7) Directives are still being issued in Washington sending tremendous tonnages of sheets into export or to some agency, etc.—perhaps our industry can help itself by writing Congressmen asking that these directives be abolished.

(8) Some of the sheet mills who used to hand dip sheets have dismantled their hand dipping to make space for continuous galvanizing and this new process will not be in production for some months.

(9) Many large users—like automobile body builders—are now building up tremendous stocks of materials and until these stocks are completed these large buyers will be actively in the market for tens of thousands of tons of sheets.

(10) There is a railroad car building program being talked up for the second quarter which, if approved by Washington, can take practically every pound of heavy plate production for several months.

(11) Because every mill can now sell its production within a relatively small area there is not now the interchange of sheet from area to area which formerly existed.

(12) As to actual figures, it seems there was in 1946 a total production of cold and hot rolled sheet of about 15 million tons. If operations go along without interruption there can be a total production in 1947 of about 20 million tons. Right now, demand is holding steadily at several million tons in excess of this rate.

Specific suggestions for a solution are pitifully inadequate. If the customer will agree to pay the price, sheets can be bought in the "black market" and many contractors are getting such agreements. For some applications, other materials may be used in place of galvanized and black—contractors are reporting the use of aluminum, asbestos-cement board, zinc, copper, even wood and wood substitutes. Every contractor must make a real effort to ferret out stocks of materials not being used—these may be holdovers from some war activity or stocks purchased but not used. Buying of materials which can be used for trading purposes is being pushed by many contractors.

The first half of 1947 appears to be a time of scarcity in sheets—the solution is difficult—but the "pipeline is getting filled and, when filled, there will be sheets running out our ears."

Arnold Kruckman's

Washington Letter

The Congressional Program

THE puzzling confusion in the news out of Washington is best explained this way: the new Congress is sincerely trying to do a job as the majority want it done; but 1948 is in the consciousness of every person in Government, and the growing popularity of Truman seriously concerns every Republican and Democrat, including Senator Taft who appears to be leading the Republican field. The result is that the people on the Hill are trying their level best to do the popular thing but at the same time they do not wish to do anything that will offend the powerful groups—such as labor—who are at least temporarily in the popular doghouse. Consequently you will get the appearance of drastic labor legislation and tax reductions and other legislation, but in real effect there will be cautious pulling and hauling and stalling which in the end undoubtedly will wind up in the kind of straddling legislation which will actually be very innocuous.

There is, for instance, the Army, Navy Air Force merger. An analysis reveals it is not really a merger but is a method of combination by which a new head is designated as a sort of clearing house official and the rest of the business of the armed services continues under the direction of secretaries who function over each separate arm almost exactly as they have in the past. Navy for example keeps all its own Air Force and similar facilities and the Army Air Force continues practically as it has been doing business the past years. Just what it may mean in terms of reduction of cost no one will be able to tell for at least a year or two.

Is War Over?

It is true the President has declared hostilities at an end; but we are still in a state of war, and there are still on the books more than 450 special power statutes which cover the procurement laws by which the Government agencies function; also there are left the powers which enable the President to reorganize any Government agency; and the over-all financial controls are still in complete force whenever the President wishes to apply any of them. All laws which give the Executive complete control over the merchant marine are still in force; and he can do anything he may have in mind about freight and traffic controls, which probably is wise. The freight car shortage is expected to be worse by mid-March, and it is predicted it will continue for at least another year, and very probably longer. Replacement cars are reported over 1,000 short every month. There are people who insist this condition will continue for three to five years. Bulk, long distance shipments right now are in worse condition than local shipments. Government says many large firms are organizing their own fleets of trucks for permanent use; and that air freight is building so fast for shipment of small high-priced lots that it is another real problem for those who administer this branch of transport.

Technicians in Capital

The importance of watching Washington is revealed by the surprising fact that there have never been such large groups of trade association officials and experts in the Capital as there are today. There are more persons permanently quartered here from industry with special qualifications, such as engineers, chemists, accountants, technical experts, and industrial skilled personnel, than there were during the war. Big industrial organizations are constantly adding to their units. Under the new law upwards of 300 very substantial and well known persons, including five former members of the Congress, registered as lobbyists. More are signing the book every day. You get another aspect of the story by the fact that almost 2000 new bills were introduced in the Congress the first 14 days of the session. And they have discovered the bug in the Reorganization Law. It requires that every Member of the Congress should be placed on at least two Committees. There are at least three Members who have not been placed on any Committees because they are neither Democrats nor Republicans. The Law therefore must be rewritten in order to validate the omission of men such as Marcantonio, or to provide a place for them.

As to the state of the national economy in the months immediately ahead, you can get as many prognostications as there are Members of Congress. Many are privately gloomy and

publicly optimistic. This reporter has not yet been able to find any forecast, either from Government or non-Government sources, that makes good sense. The equations are so complex and so diverse, and apply to such a wide range of human activity and global geography that most of the prognosticators invariably omit some factor or factors which completely change the picture. The one thing you can sense with certainty is that there is a drift towards a greater national defense program. Also it is very clear that one of the greatest problems the man in business has to consider are those vastly duplicated orders on many books; and he must bear in mind the rapidly increasing sales resistance which apparently extends from the retail level to the manufacturers' altitude. We also have impressive signs here that products of inferior quality are backing up in the pipelines; people do not want the stuff. And we know that credit is being squeezed. A recent Government survey, privately conducted, shows that 71 out of every 100 persons want rent control continued.

Portal-to-Portal

Topping immediately all labor legislation is the debate about the Portal-to-Portal problem. This reporter enjoys the debate, but does not think there is any remote chance that the most horrendous implications of the Supreme Court ruling will ever really cause the national economy to expend $5,000,000,000 in paying back pay which no one knew anyone had coming. A lot of the palaver is a cover-up to divert attention from the issue of higher wages and modification of existing labor laws. There seems little likelihood that Senator Wiley's S 70, exempting all employers from paying Portal-to-Portal pay, will ever become a law; the issue seems really to have been more vitally interesting to a lot of alert and adventurous lawyers in all parts of the country than to either the labor thinkers or the industrial leaders. It is doubtful if the whole hullabaloo would have arisen if the smart lawyers had not sensed a grand chance for a field day to get fees, coming or going. It is clear here in Washington that most members of labor unions think the general back-pay proposition is unfair; but they do wish the principle to apply in the future when it does not simply cover trivialities such as time spent in changing clothes or walking upstairs.

The Selfless Unions

Both AFL and CIO have made quite clear they do not seek the extravagant billions you have read about in the newspapers. But they all want some of the rich pickings thus suddenly offered by the Supreme Court, and it will be wisdom for the smaller companies with small plants, machine shops, foundries, and similar enterprises, to bear in mind that they also will be asked to provide back pay. The realistic members of Government agencies here suggest you watch this: assuming you settle voluntarily, make certain the agreement covers a fundamental dispute over a fact, not over a debate about your liability; make clear the time involved, and what the rate of pay may be you are settling for. Also remember back pay liability is limited by the statute in your own State—often you are liable only for a year; in others as much as five years. It also is suggested you can save yourself future grief by reorganizing the lay-out of the work schedule; also make a deal with the shop union for standard rates in production time, and a lower rate for travel or preparation time. Overtime is computed by averaging the two rates as they may apply. The Department of Labor, Washington 25, D. C., has a good booklet, "Arbitration of Grievances," which will be helpful in connection with this Portal-to-Portal business. Pressman, of CIO, for bargaining purposes, has set from 3 to 6 years as the limit for back pay claims; CIO wants to work out the details by means of collective bargaining. So does Bill Green, who suggested it first. The Gwynne Bill would set a limit of one year. Both Senators Wiley and Capehart wish to legislate the back pay claim out of existence. But there are extremely grave doubts that retroactive prohibition can be made law, under the Constitution. The Gwynne Bill also would wipe all Portal-to-Portal suits from the Courts.

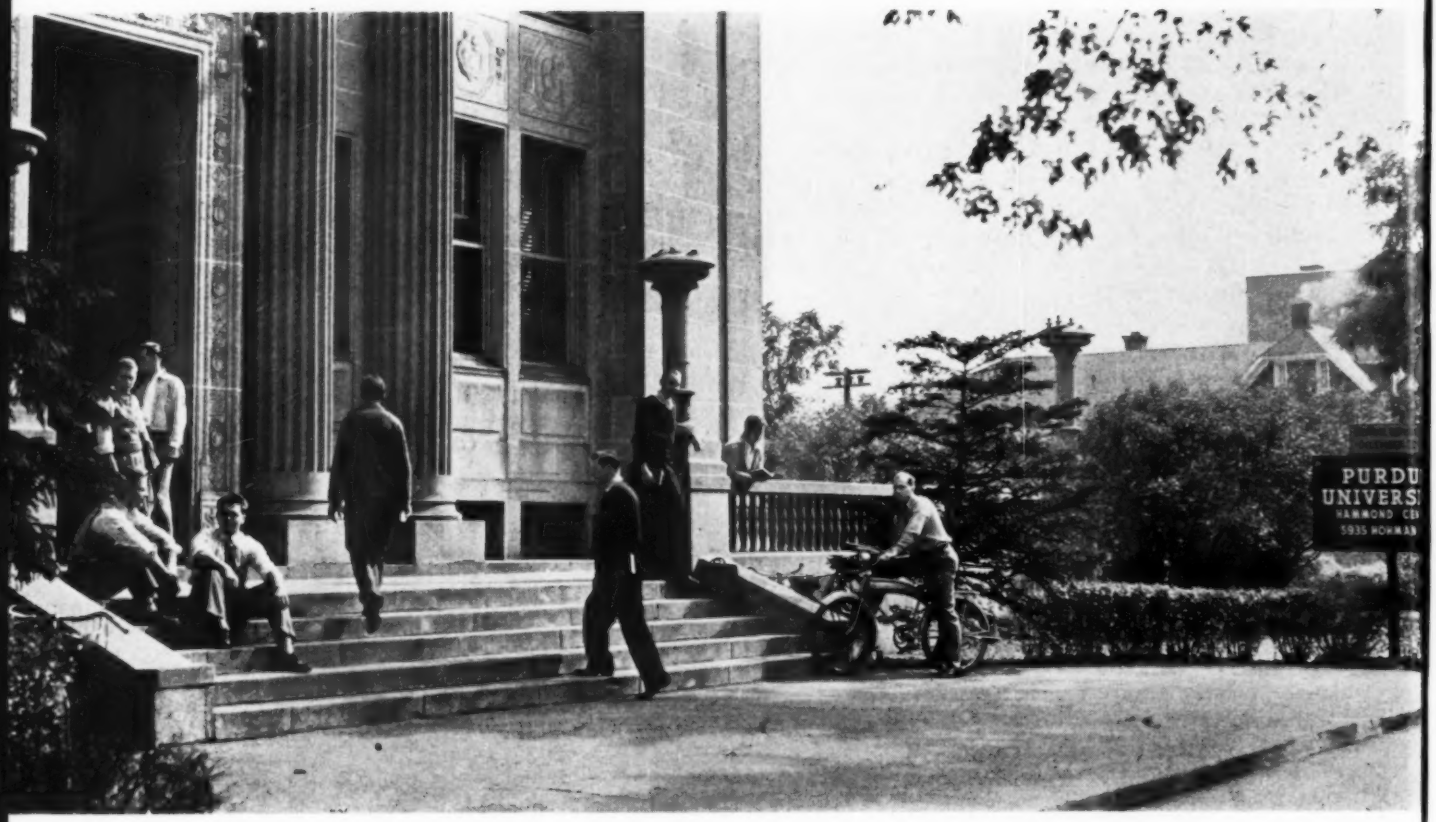
The top labor bills now in the Congressional mill are the Case Anti-Strike bill; Ball's Federal Mediation bill; the Gwynne bill, limiting all wage recovery to one or two years. The Republican Steering Committee forecasts gingerly there will be amendments to the Norris-LaGuardia Act, which forbids injunctions against labor demonstrations, and a bill outlawing compulsory membership in Unions. But Congress has already very sharply backed away from the anti-closed shop legislation. Even Senator Taft, who obviously is placing himself in the way of being a candidate for the nomination for the Presidency in 1948, has openly opposed any tampering with the closed shop. The Senate Labor Committee, which Taft heads, the other day, formally went on record against Ball's ban on the closed shop.

Action or Discussions

It pointed out that the only States with anti-closed shop laws are Florida, Arizona, South Dakota, and Arkansas, and it emphasized that this prohibition has not been tested in the Courts as to Constitutionality. The Case bill will cover the closed shop issue, the issue concerning jurisdictional strikes. It is expected to be ready by February 15. But, issues affecting industry-wide strikes, compulsory arbitration—to which Taft is opposed—the revision of the Wagner Act (by redefining unfair labor practices for labor as well as management), are not to be brought to the front until there has been much more discussion in public and in hearings. It is forecast that Truman will accept the revised Case bill with some form of national mediation and a 60 day strike ban; also with prohibition of secondary boycotts, the definition of which no two people here can agree upon. The bill also is expected to outlaw foremen's unions, and will make unions liable for civil damages for breach of contracts. There may be a provision for financial accounting by unions, and some very mild limitation on the closed shop; and finally the jurisdictional strike may be banned.

Congressman Howard Smith of Virginia wants a far more drastic law with compulsory arbitration; basic industries would have to bargain collectively without striking; and his law would prohibit picketing. It is anticipated there may be strikes by March 1. Labor is expected to *ask* 25% increase, and to accept 10% to 15%. The real tension now is felt in the steel negotiations, based on 14 demands. Over 720,000 steel workers in 700 basic industries have filed their 30-day strike notices. The contracts expire between February 15 and April 1. The contracts covering another 125,000 workers expire later. The word is that they ask for 25% raise, and will settle for 15%. There also is a potential of real trouble in the numerous FEPC bills which have been introduced, designed chiefly to prevent any employer of 5 or more from refusing to employ Negroes. It is expected the bills will be made into law. The pressure from all the populous sections is insistent. Off

(Continued on Page 140)



Purdue Offers
"PRACTICAL" ENGINEERING COURSE

By Howard C. Gillespie
Assistant Director of Information
Purdue University

THE Purdue University Division of Technical Institutes represents a new venture on the part of an established institution of higher education to meet, in a realistic fashion, the changing needs in education in our time. It has become increasingly apparent that in a maturing industrial economy the need for technically trained personnel increases in a direct relationship with the expansion of industry. The whole transition of education in the United States can be related to the growth of industry and the varying positions it has played in our society and the general welfare of the people. Those charged with the responsibility for directing our educational program are familiar with this development and are continuously looking toward the future for the purpose of meeting, or even anticipating the needs of the lay public.

Engineering Education Analyzed

During the 1920's a significant study* was made of engineering education in the United States. As a result of the work done in this study, a report entitled "A Study of Technical Institutes" was published by the Society for the Promotion of Engineering Education in February, 1931. A seventeen point summary of principle findings and conclusions of this study presented to educators a program for the direction of education in technical fields for some years to come. Some of the highlights of these conclusions may be briefly stated as follows:

1. "American industry in practically all of its branches is understaffed with men of scientific and technical education."
2. "The situation in industry warrants a great expansion of technical education above the present level of the secondary school. The secondary school is itself a valuable adjunct to technical education, but with the present emphasis on social adjustment, it can scarcely hope to give the highly directed training demanded for the planning and supervisory work of industry, nor can young men be prepared for posts of this character much below the age of twenty-one."
3. "The present group of engineering colleges, numbering close to 150 and graduating about 9,000 men each year, does not provide for many of the needs of industry."
4. "The Technical Institutes appear to cater more effectively than do the engineering colleges to young men who have previously passed through a period of indus-

*"*The Investigation of Engineering Education,*" Society for the Promotion of Engineering Education, W. E. Wickenden, Director of the Investigation.*

Students at school and at work. At the left are students in a class in D.C. Circuits and Machinery, while the girl on the right is a laboratory assistant who attends Purdue's Technical Institute.

trial experience and orientation, to men who have a career plan definitely mapped out, to men who have passed out of a state of book-mindedness, to men whose natural learning processes center in actual doing rather than formal study, and to men who, for financial or other reasons, cannot devote four years or more to preparation for remunerative employment."

5. "The day technical institute, with an evening department, is the objective to be aimed at wherever possible."
6. "The cooperative plan, based on alternating periods of school work and industrial employment, seems particularly well adapted to the aims and levels of age and work of the Technical Institutes."
7. "The actual needs and the potential demands are beyond the resources of voluntary and private agencies, although the latter have important contributions to make to the enterprises as a whole."
8. "The largest field to be served by the Technical Institutes appears to be that of training men in the technology of particular industries, rather than that of generalized engineering courses of broad aims."

While other conclusions were reached those itemized above represent the general thesis of the argument presented in the report. Although the figures vary from industry to industry, it was generally agreed in the report, that the number of persons needing the type of training indicated as of the Technical Institute type, exceeds the number of engineers trained in the engineering colleges by quite a large per cent.

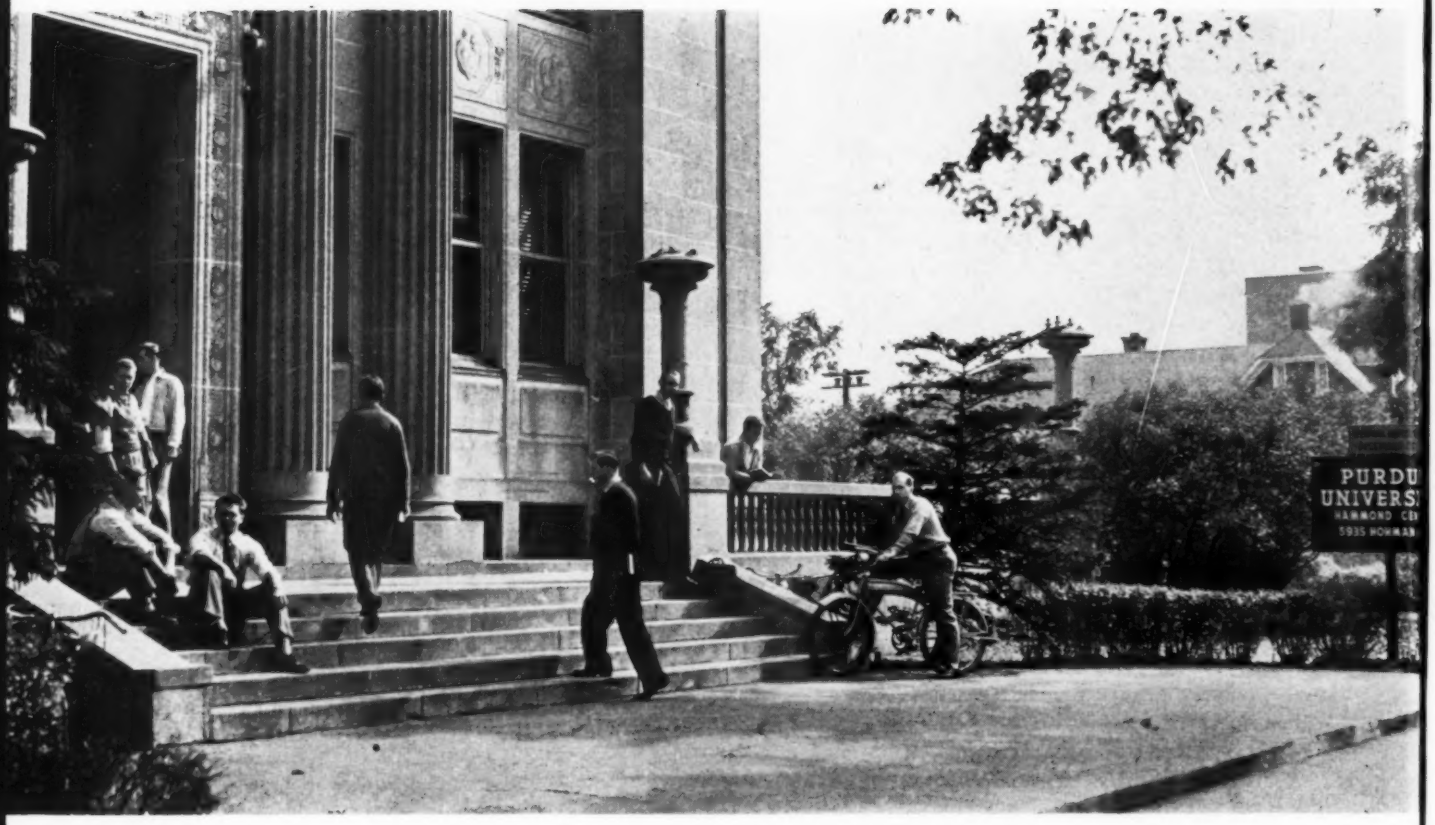
Unfortunately the report was presented in 1931, a time when retrenchment, rather than expansion, was the pattern of educational development because of the depression. The impact of the report was not as significant as it might otherwise have been. Little was done in this connection until the advent of World War II.

When World War II faced the nation it was universally recognized that the shortage of persons trained in technical and supervisory capacities was appalling. Under the guidance of the United States Office of Education, many universities cooperated in offering programs of training variously identified as Engineering Defense Training or Engineering Science Management Defense Training, and later Engineering Science Management War Training. During the period of this type of training, for example, Purdue University enrolled upward of 60,000 persons in classes, the general character of which was akin to the type of education suggested in this report on technical institutes. This same pattern of activity was duplicated throughout the country.

As an outgrowth of this activity, and based primarily upon the reports prepared by the Society for the Promotion of Engineering Education, engineering institutions have reconsidered the proposition of establishing technical institutes to do a job that must be done.

Purdue Program Founded

Under the guidance of Dr. A. A. Potter, Dean of the Schools of Engineering, Purdue University formulated a plan for inaugurating a program of technical institute training in 1943. The program was launched with only 39 students enrolling on a part-time evening basis in Hammond. The offerings were limited. The entire teaching staff was recruited from industrial personnel. While maintaining full employment at their regular jobs in the day time these teachers carried on instruction in the Technical Institute in the evening. This beginning was followed by the opening of centers in Fort Wayne and Indiana-



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polis, where again instruction was on a part-time evening basis. The development of the program was rapid. It indicated in a conclusive manner the interest in this type of program. Now, in the fall of 1946, Purdue University is offering instruction through the Division of Technical Institutes on both a full-time day and part-time evening basis, in Anderson, East Chicago, Fort Wayne, Gary, Hammond, Indianapolis, La-Porte, Michigan City, and Muncie. The enrollment after three years of activity is in excess of 1,000 persons, and the number is still increasing.

What the Institutes Are

As organized at Purdue the Division of Technical Institutes offers specialized, intensive courses designed to meet the demand for technically trained persons. The curricula of the program parallel and are closely related to, the engineering curricula of the university. However, they differ from the engineering-college type of curricula in that they emphasize *applied* and *technical* rather than *basic* or *theoretical* study. The facilities of the Division are available to those who wish to qualify as engineering aids and technicians, such as laboratory supervisors, inspectors, junior draftsmen and designers, laboratory technicians, control instrument experts, specialists in electrical circuits and machinery, persons charged with technological responsibilities and skills. The Division is open to all who can qualify for admission. Various courses are offered to cover the basic knowledge and practices of present-day industry. Industrial leaders have been consulted to learn the kind of specific technical information required by persons who take jobs in industry. Many members of the instructional staff are drawn from local industry, but course administration, teaching materials, and standards of instruction are under the direction of the university.

While casual, part-time students, enrolling for only a course or two, are welcome and constitute a sizable portion of the total activity, the Division was established primarily to offer complete study programs leading to the Associate Technical Aide and Technical Aide diplomas.

Various programs of study have been identified, and the number of these and their purposes have shifted some from year to year as the total operation has endeavored to analyze the needs and meet them with specific instruction. Throughout all of the activity, however, the general objectives have been consistent. In each program of study, though the number of courses may not be identical, the credit points allowed in total are the same, and in each of these programs the same general organization has been followed. All students are required to take a certain number of fundamental courses, covering basic information, primarily in the scientific and technical areas of study. These include mathematics, physics, chemistry, drawing, English, and industrial management. In addition to these fundamental courses all students are required to take certain non-technical courses covering the fields of history, government, economics, psychology, and speech. The remaining part of each program is composed of work in the specific major fields. Here specialized instruction related to the particular field of study is given.

A scene in an engineering drawing class at PTI. A very capable instructor from industry (a draftsman himself) teaches the course.

When the program was first initiated in 1943, six major fields of study were identified. These were as follows:

I. Technical Chemistry
II. Industrial Design Layout and Drafting Room Practices
III. Technical Electricity
IV. Mechanical Principles and Practice
V. Industrial Metallurgy

(Continued on Page 143)

NEWS SUMMARY OF THE MONTH

Blower Manufacturers Launch Research Project

The Furnace Blower Manufacturers' Association, in co-operation with the Research Residence staff at the University of Illinois, has announced a new research program which will be co-ordinated with the research program of the National Warm Air Heating & Air Conditioning Association.

The first testing plant to be erected is now in the planning stage and will consist of a large plenum chamber containing four different flat plate orifices calibrated in position. In the chamber will be a 12-inch blower. The air from the chamber will be delivered by a furnace blower combination with a gas-fired highboy model furnace to test the actual internal air resistance of this type of furnace.

In the test set-up blower manufacturers will have available complete facilities for measurement of air deliveries, pressures, power input, and it is anticipated that out of this research program will evolve a test method which will be available to all furnace manufacturers for testing their particular combination of furnace and blower.

Tin Is Still Hard to Get

Imports of tin from the far east during the first nine months of 1946 amounted to less than 2,500 tons or about five per cent of the prewar average. During this same nine months' period, CPA says that tin imports from all sources amounted to about 38,000 tons. Tin consumption in the US, according to the agency, decreased to 59,000 tons compared with 66,000 tons in the similar 1945 period.

All of this means, in brief, that tin is still difficult to get and will not be in plentiful supply until imports increase considerably.

1946 Building Review

Following is *Architectural Forum's* summary of building construction during 1946.

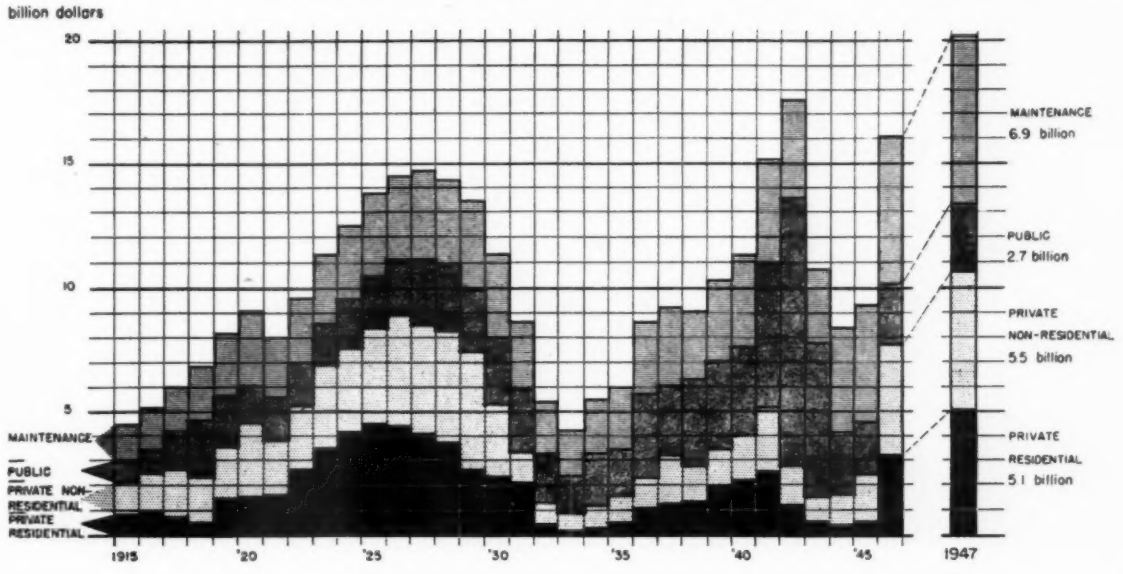
While forecasts for 1947 dwarf most of last year's records, 1946 was a big, if not good year for Building. At $7,950 million, new private construction stood head and shoulders above any volume recorded during the past 17 years, came within hailing distance of the $8,762 million high established in 1927. (The 1941 wartime peak for private building was $5,238 million.) Government controls channeled $3,310 million, or 42 per cent, of this private money into residential building which paid for the launching of about 685,000 permanent dwelling units, compared with 250,000 units in the preceding year and 1925's all-time high of 937,000. Some 450,000 permanent units were completed during the year. Additional units provided by conversions and Federally financed temporary housing raised these "starts" to 1,000,000 and completions to 660,000.

Despite the fact that government authorizations for non-residential building were held down to $35 million per week during the latter part of 1946, the volume of private activity in this field trebled the 1945 figure, totaled $3,440 million. Industrial plant expansion made the biggest dollar gain—from $642 million to $1,770 million— and commercial building, the biggest relative gain—460 per cent to $1,115 million. Farm and public utility construction rose less spectacularly: 83 per cent and 27 per cent respectively.

Unlike privately financed building, public construction, at $2,150 million, merely held its own during 1946, looked like peanuts compared with the peak war-time expenditure of $10,656 million in 1942. The only significant advances last year were a 340 per cent increase in housing to $310 million and a 150 per cent boost in highway, water supply and sewage disposal projects.

Reflecting the ever-increasing inventory of completed structures and making up for their war-time neglect, the industry performed more maintenance and repair during 1946 than ever before. The $6,000 million bill was 26 per cent bigger than 1945's, almost as big as 1939's total new construction.

BUILDING FORECAST—1947: $20.2 Billion



How To Reduce Payroll Taxes Under Merit Rating* [Part 3]

A PERSON is *not* entitled to unemployment benefits if any of the following conditions exist:

1. He is still *"employed."*
2. He is *unable to work* or is *unavailable for work*.
3. He has not served a *waiting period*.
4. He *left his job without good cause*.
5. He was *discharged for misconduct* connected with his work.
6. He failed or refused to apply for or *accept suitable work*.
7. He is unemployed because of a *labor dispute*.
8. He received *wages in lieu of notice, disability, old age or unemployment benefits, pensions, etc.*
9. He made *misrepresentations* to obtain benefits.

Some states also specifically disqualify students, or women leaving work because of pregnancy or marital obligations.

Where an employee goes to another state after leaving your company, your account may still be charged with benefits paid to him in the other state. Under an interstate plan, subscribed to by all states, the other state will simply act as the agent of your state in handling the claim.

When is a Person "Still Employed"?

A person may be considered "employed" and ineligible for benefits even though he is not working, or is not receiving full wages. Here are five general types of cases in which this seemingly paradoxical situation can occur.

1. *Commission salesmen.* A commission salesman who is required to work full-time, is not eligible for benefits even though he earns no commissions in a week. The contingent nature of his compensation is an element of his employment contract, which he accepts with the job. However, if commission selling is not his usual work but merely a temporary expedient while unemployed, he may be eligible for benefits, since he is really not "employed" in a permanent job but is looking for a job in his regular occupation. Also, if commission salesmen are employed on a part-time basis, they may be eligible for benefits in weeks of low earnings.

When hiring commission salesmen, specify in a written contract that they are being employed on a *full-time basis*. Since state laws require, as a condition of *total* unemployment, that *no services be performed* and, as a condition of partial unemployment, that *less than full-time work* be performed, this provision is practically sure-fire protection against benefit claims by commission salesmen who earn little or nothing during a particular week. Once you've contracted for the salesman's full-time services, he can't convert a week of full-time work into a week of no services or a week of less than full-time work *by simply not going out to work*.

2. *Part-time workers.* A person who is regularly employed as a part-time worker is ineligible for either total or partial benefits so long as there is no reduction in his work and wages. His part-time hours are, in effect, full-time hours for him for that job.

If you employ part-time help to do work which fluctuates in volume, try to arrange for a definite basic number of hours to be worked each week at a definite wage. Then, although the workers put in a greater number of hours in rush weeks, they cannot claim benefits in slow weeks if they are given the agreed minimum number of hours.

3. *Self-employment.* A person who, by his personal activity, is contributing substantially to a business, occupation, or profession is self-employed, and not eligible for benefits, even though he earns nothing in a week. He puts in a full week's work, or if not, lack of work is voluntary on his part.

If you know that a former employee is running his own business or farm, be sure to advise the agency of this fact. Such a claimant is ineligible not only because he is not "unemployed" but also because he is probably not available for work.

4. *Shutdown and leave of absence.* A worker is not eligible for benefits during a period when he is on a leave of absence which he has requested. The employment relation continues between him and his employer, and he is expected to return to work at the end of the period.

This is also true where there is an unpaid layoff or shutdown of the plant to which the worker *consents*, either personally or through a union which represents him.

However, where the employer *orders* an unpaid layoff or shutdown, without the consent of his employees, the workers are unemployed involuntarily and may be eligible for benefits.

5. *Learners, apprentices, etc.* Whether trainees or apprentices are eligible for benefits during the period of training depends largely on the circumstances of the case. Generally, if the learner is being paid a wage or is required to put in a full-time week, he is not eligible for benefits. However, if the learner merely attends school and performs no other services, or if he performs services incidental to the learning process without remuneration for them, he may be eligible for benefits.

Hire trainees under contracts which obligate them to study and work for you on a full-time basis. Then, even if the salary is lower than the benefit rate, they will be ineligible because they are "employed" full-time.

Unable to or Unavailable for Work

Unemployment benefits are not sick benefits nor are they meant to finance idleness. To be eligible for benefits, your ex-worker must be in the labor market. He must be able and willing to work. Note that the burden of proving that the claimant is not able or available *is on the employer or the state agency*.

"Able to work." A person who is mentally or physically ill, or so aged or disabled that he cannot perform any marketable

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services is not "able" to work. Therefore, a person who is ill can receive no benefits until he has recovered sufficiently to be able to take a job. (The only exceptions are Maryland, Montana and Nevada, which pay benefits where illness or disability occurs after a person has registered for work, provided no suitable work is offered to him after the illness begins.)

Aged and disabled persons who can do no work are totally barred. For example, a claimant who was almost totally blind, and had no training for any work not requiring the use of vision, was held "unavailable." However, if claimants are able, both physically and by training, to perform the principal duties of some regular job in the competitive labor market, they are eligible, even if they can no longer engage in their *customary* work. Thus, a claimant with impaired vision who could no longer do his usual work on a loom, but was qualified for other work in the mill requiring less than perfect vision, was held "available."

"Available for work." To be considered in the labor market, claimant must be willing to do work for which he is fitted by experience, education or training, and *which there is a reasonable prospect of securing in the existing labor market.* He cannot hold out for a tailor-made job, suited to his particular inclination or convenience. If he places unreasonable restrictions or limitations on the work he will accept, whether as to hours, wages, shift, skill, etc., so that the type of job he wants is virtually non-existent, he will be held "unavailable" and ineligible for benefits.

A claimant is not considered in the labor market when he will only accept a job on the night shift where night work is not available in his industry. The same is true of an office worker who will only accept a job with hours from 11 a.m. to 3 p.m. when regular business hours are from 9 a.m. to 5 p.m. In short, to be eligible, claimant must be able and willing to accept work at the prevailing rate for one of his skills; he must be able and willing to live in or have transportation to an area where work of the type he can do exists; and to work at the hours and under the conditions prevailing on the job.

If an employee leaves you because he wants a rest or is ill, *notify the agency* to that effect. He will either he held unavailable, or—if he is falsely stating his reason for leaving—may be disqualified for leaving voluntarily without good cause. You may know of some other reason that claimant should be deemed unavailable: for instance, that he moved away from an active industrial area to a locality where job opportunities are scarce; that he is running his own business; that home conditions make it difficult for him to work regular business hours; that he intends to retire and is seeking benefits only because "he is entitled to them"; that he is holding out for a salary too large in view of his abilities and the condition of the labor market; that he will accept only union work in an area where none is available; etc. Any one of these situations may be sufficient to render claimant "unavailable" and so prevent unjustified charges against your merit rating account.

Waiting Period Not Served

Before benefits will be paid to an unemployed worker, he must serve a waiting period of one or two weeks (see the table in January, 1947 issue for various state requirements). During this period, he must be continually eligible in all respects.

Note that "waiting period weeks" and "weeks of disqualification" cannot be served concurrently. Thus, if X is disqualified for benefits for five weeks because he left his job without good cause, and the waiting period in his state is two weeks, he must wait seven weeks before he can receive benefits. Usually, the waiting period need be served only once each benefit year.

This compulsory waiting period can operate to your advantage. (a) Check whether there are any *existing disqualifications.* Did the worker quit without good cause? Was he discharged for misconduct? Is he unemployed because of a labor dispute? (b) Be alert to catch any *new disqualifications.* Is the worker ill or prevented by family obligations from taking a job? Is he holding out for a job at a salary too high for the existing market or his qualifications? Has he refused a suitable job offer?

The longer the period of postponement or waiting for benefits, the better the chances that benefits will not be charged against your account, either because the worker has found another job or because he is further disqualified for failing to take suitable work when offered.

When Has a Person "Left Work Voluntarily"?

A claimant who voluntarily leaves his job without good cause creates his own unemployment. He is penalized by having his benefit rights postponed or even cancelled. Some states put sharper teeth in this disqualification by requiring that the good cause which will justify a voluntary leaving be connected with the work or attributable to the employer. You will know all the *facts* necessary to impose this disqualification—but to do so successfully, you must also know the *elements* of the disqualification:

1. *He must actually quit.* The *worker* must be responsible for the termination of the employment relation. It must be *his act and intention* which ends his job. Otherwise, it will not be a quitting—but a discharge.

Ordinarily, a worker gives notice that he will resign as of a certain date. It is good personnel practice to require such notice to be given in writing. This is clearly a voluntary leaving if you accept the resignation as it is given. Note, however, that if you make it effective as of an earlier date than the worker specifies, *you transform the quitting into a discharge.*

Where the worker doesn't formally resign, but simply fails to come to work, his intention is the important element. It is determined from the circumstances. If he doesn't notify you of the reason for absence and is absent for a considerable time, he will be deemed to have quit. If he is on a leave of absence or vacation and doesn't report back to work when it ends, he should notify you if he has some excuse. If not, he will be presumed to have quit.

2. *He must quit voluntarily.* To disqualify the worker, you must show that the leaving was *voluntary.* If the worker was compelled to leave, either directly *or indirectly,* he will not be disqualified on the ground that he was actually *discharged.*

The question commonly comes up where the employer requires the employee to do something, "or else"—the implication being that noncompliance will result in discharge. If the employee quits, the leaving will usually be held voluntary, with the real issue on the further question *of whether he had good cause for leaving* (discussed below). For example, where an employer reprimanded an employee and said, "Obey the 'no-smoking' rule or else," the worker's leaving was held to be voluntary *and without good cause.* He was disqualified from benefits.

3. *He must quit without "good cause."* A man who quits his job is disqualified from benefits unless he has "good cause"

for leaving. The commonly accepted test of "good cause" is *reasonableness*. This is measured by what the ordinarily prudent worker would do under similar circumstances. The ordinary worker wants continuous employment. He will not quit for a frivolous reason, or without seeking some other solution of his difficulties, such as trying to adjust his grievance with his employer, giving the work a fair trial, or requesting a leave of absence to adjust personal problems. Unless the circumstances clearly show that these steps would be futile, a worker who quits without attempting them first will usually be quitting without good cause.

In some states (see table in the January 1947 issue) the worker's "good reason for quitting" *must be connected with his work or attributable to his employer*.

A worker who leaves his job to accept a definite and immediate offer of a better position which then fails to materialize has acted reasonably, and leaves with good cause—but this good cause is not connected with his work nor attributable to his employer, and in states having those requirements he would be disqualified.

4. *Reasons for quitting as good cause*.

a. *Hours*—A claimant leaves with good cause connected with his work where long or irregular hours of work are adversely affecting his health or creating transportation problems which he can't overcome; where his hours have been raised unreasonably without a corresponding increase in pay; where his hours are reduced so radically that his pay is below a living wage; where the hours required are substantially longer or less favorable than those prevailing in his locality for similar work.

b. *Wages*—A claimant quits *without* good cause where he is dissatisfied with the amount of his wages although he is receiving the prevailing rate for similar work in the locality. However, if the refusal of an increase by the employer violates a definite agreement to give a raise at a certain time; the claimant leaves with good cause—and this good cause is both connected with his work or attributable to his employer.

A reduction in wages, based on a reasonable ground, does not constitute good cause for leaving where the lower wages are still the prevailing rate for similar work. However, where the reduction is substantial or unreasonable, claimant may leave with good cause if his prospects for securing other work at higher wages are good, considering the condition of the labor market.

c. *Working conditions*—A claimant quits with good cause connected with his work or attributable to his employer in cases like the following, provided he has first taken reasonable steps to cure the situation. (i) A superior unreasonably reprimands or abuses him. (ii) Substantial unpaid overtime is required of him. (iii) He is burdened with an unreasonable increase of duties without corresponding increase in pay. (iv) He is transferred to work which adversely affects his health. (v) His work quota is unreasonably heavy. (vi) Hostility of fellow employees is serious and continued. However, all these situations depend on their circumstances, and even though the worker may have good reason to quit he will be held to have left without good cause *if he fails to exhaust other possible remedies*.

d. *Personal reasons*—Quitting for a compelling personal reason—such as illness of a member of the family, to go into one's own business, to take a better job—is for good cause, but the cause is not connected with the work or attributable to the employer. A worker who quits because of his own illness leaves with good cause—but unless the illness results from or is connected with the work, it is disqualifying in the states with those requirements. (However, some states with these requirements allow benefits on the theory that the separation is *involuntary.)*

When an employee leaves because of a complaint about conditions over which you have control, find out whether or not he *complained about the matter to you before quitting*. If he did not give you a chance to rectify his grievance, he may be disqualified, *even though the grievance would be good cause for leaving*. If you find that he did not complain, notify the agency of that fact along with any other material you submit.

Find out what the employee *intends to do*. You may be able to get a slant on his eligibility during the period ahead aside from any "voluntary leaving" issue. Does he already have another job? How good are his prospects? If his prospects of new work are poor, the state will view his quitting more critically. Will he be demanding far more than he stands a chance of getting? If there is little hope of finding the job he insists on, he will be "unavailable." Is he quitting to devote his time to a business of his own?

Make sure that your supervisory employees don't become a merit rating liability. Cases show that a large portion of the benefit drain on an employer's merit rating account is directly attributable to supervisors. They either create good cause for an employee's quitting or allow good cause to be created without taking remedial steps. *The best protection against such tax leaks is a well-informed supervisory staff*. Each foreman, manager, etc., should be prepared to explain any leaving for good cause over which he had control.

When Is a Person "Discharged for Misconduct"?

A person who loses his job because he has been guilty of conduct detrimental to the interests of his employer is not entitled to benefits since he has lost his job *through his own fault*. Not *every* wrongful act will justify disqualification from benefits; you must be sure that certain factors are present.

In the first place, *there must be an actual discharge*. The worker must clearly understand that he is being separated from his work, without prospect of reinstatement, at your insistence. A mere suggestion on your part that the employee leave is not a discharge. However, if you tell him to resign or be fired, his leaving is considered a discharge.

Discharge must be for misconduct. Misconduct is an employee's act or a failure to act in the course of his employment which is in disregard of or detrimental to the interest of his employer. It is usually not necessary that it be wilful or malicious (although some states specifically require the misconduct to be wilful, gross or flagrant). It need not cause a financial loss to the employer, nor need there be a violation of civil or criminal statutes. However, a single act of wrongful conduct is usually not sufficient to constitute misconduct—unless it is clearly wilful or malicious.

Where you have permitted your workers to pursue a course of conduct or to disregard certain company rules, you cannot suddenly use such conduct or violation as a basis for a discharge for misconduct. You can cure this situation by giving notice that further violations will be stringently dealt with and will constitute grounds for dismissal.

(Continued on Page 146)

More Joint Apprentice Committees Are Needed for the Construction Program

By Maurice M. Hanson

Assistant Manager, Apprentice Training Service, U. S. Dept. of Labor

The Sheet Metal Contractors National Ass'n adopted an apprentice training program April, 1946. The Sheet Metal Workers International Ass'n adopted an apprentice training program in December, 1946. At a meeting of special committees from both organizations, in January, a unified program was adopted. This program is now being considered by both associations and the final program will be released shortly. AA will report it in detail.

As construction materials become available, the next big bottleneck may be the supply of skilled craftsmen. The only practical way to provide an adequate supply of journeymen workers is to establish and maintain apprenticeship programs in all wage areas throughout the country.

5000 Committees Are Needed

The General Committee on Apprenticeship for the Construction Industry has as its goal the establishment and operation of 5000 local joint apprenticeship committees composed of equal representation of contractors and labor in all of the construction trades. The General Committee is a joint committee composed of national employer and union organizations in the construction industry. The General Committee speaks officially for the construction industry and it establishes policy in its field for the Apprentice-Training Service of the U. S. Department of Labor.

The General Committee on Apprenticeship for the Construction Industry has issued a public statement that 5000 local joint apprenticeship committees must be established and consistently maintained in all of the construction trades in order to train the skilled mechanics for the huge construction job before us.

Apprentices begin to produce as soon as they are placed on the job. Therefore, every effort must be made by contractors and labor, both nationally and locally, to prepare openings for apprentices by establishing local joint apprenticeship committees.

National Organizations' Program

Two years ago the Sheet Metal Contractors National Association laid the foundation for the present apprenticeship effort by adopting a National Apprenticeship Policy.

Recently the Sheet Metal Workers International Association also adopted a comprehensive National Apprenticeship Policy. The basic principles in both policy statements are similar. Today, national apprenticeship standards have been adopted for eleven construction trades through joint cooperation of contractors and labor.

The fundamental principle embodied in all of these national standards is that the sole and final responsibility for the control of apprenticeship should be vested in local joint committees composed of the contractor and labor organizations who bargain collectively. The local collective bargaining agreement is the instrument upon which apprenticeship must be built, operated and controlled by the contractors association and the local union.

Duties of Committee

Experience proves that local joint apprenticeship committees are training the required number of skilled mechanics in their areas. Some of their important duties are:

1. To adopt an operating procedure called "Standards of Apprenticeship" based on their National Standards.
2. To indenture all apprentices to the joint committee. This device encourages all employers in the local association to participate to the extent of their business volume.
3. To establish a panel of qualified apprenticeship applicants by carefully sifting all available candidates.
4. To meet regularly and carry out the standards of apprenticeship in a constructive manner.
5. To publicize the work of the joint committee in appropriate activities.
6. To determine the number of apprentices needed by developing an agreed policy based on volume of work, age of the journeymen, and other local conditions.
7. To act as a training establishment under Veterans Act Public 346, the G. I. Bill.

Apprentice Training Service

The General Committee on Apprenticeship for the Construction Industry has designated the Apprentice-Training Service to do the field work in establishing and maintaining this national construction industry apprenticeship system.

The Apprentice-Training Service is a permanent government agency and a full functioning division of the U. S. Department of Labor, established in 1937 by the Congress in accordance with Public Number 308, 75th Congress. The Apprentice-Training Service has a staff of 300 trained field representatives in 200 field offices. The Apprentice-Training Service is now devoting 65% of its total effort in establishing and maintaining the joint committees in the construction industry. Approximately 2100 joint committees are now operating; 5,000 joint committees must be established and maintained. This job must be completed with the utmost speed in order to produce an adequate supply of skilled craftsmen in all of the construction trades.

Since apprenticeship is the responsibility of contractors and labor, it is absolutely essential that both contractors and labor make apprenticeship one of their top priority activities.

Brief Summary of Some of the Interesting Displays at the Exposition

TEN thousand contractors, jobbers, engineers and other users and specifiers of heating and air conditioning equipment, marched their legs off to the knees in the miles of aisles and hundreds of displays at the Heating Ventilating and Air Conditioning Exposition in Cleveland. Many of these visitors returned two, or three or more times to run up a total through-the-gate attendance of about 30,000.

The exposition was a huge success. There was something new, or improved for every segment of the industry. Improvements made possible by war experience and technique were visible in practically every booth.

A detailed report of the many items of interest to our industry will be published in the March issue—here are a few highlights as visitors to AMERICAN ARTISAN's booth expressed their interests.

Outstanding—but of course not unexpected—was the dominance of warm air heating and warm air heating equipment and accessories. No official count was obtained—but it was a warm air show.

As might be expected, gas heating equipment and accessories appeared in more than half the booths. There were gas furnaces of all sizes and designs—recognizable long standing units which have demonstrated their qualities over the years—and many new units, some of rather radical design. Gas conversion burners appeared throughout the exposition—units of old manufacturers and units of newcomers in the field.

The "Jet" Again

Oil ran gas a pretty close race, with complete oil units of standard design, conversion oil burners, and many accessories for oil heating. Perhaps the most startling of the oil furnaces was the "Jet Furnace' described in AA, January issue. This unit with its pint sized combustion chamber, two-inch glass composition flexible ducts, 1500 foot velocity air through tubes, 350 degree supply air and midget size drew crowds at every session.

There were also gas and oil furnaces of special design and size for such applications as apartment closets and attics; there were numerous vaporizing burners with and without forced draft; there were sectional gravity and forced air gas and oil units which can be built up from 20,000 Btu to 100,000 Btu; there were fully automatic coal burning, stoker fired furnaces which require no attention other than ordering coal; there were dozens of "hi-boys" and utility room units for all fuels.

Accessories Represented Also

The control manufacturers presented full lines of instruments for heating, cooling, ventilating—there were controls for changing the speed of the blower and controls which combine many of the functions which formerly required separate instruments.

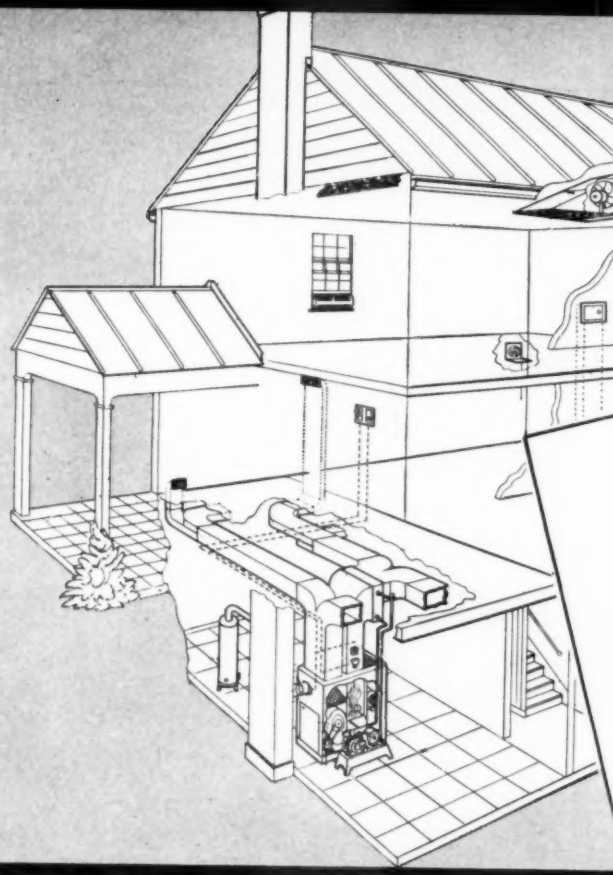
Cooling units ranged from small compact window units either with included apparatus or for remote apparatus to giant cooling plants capable of conditioning whole buildings.

The centrifugal blower and propellor fan manufacturers showed their long established units together with new, war-developed fans and blowers which produce results considered impossible a few years ago. Sizes ranged from a few inches to several feet in propellor fans and from small blowers for oil burners and stokers to mine ventilation blowers with thousands of feet of air capacity.

Practically every register and grille manufacturer displayed his complete line. It was interesting to note the several "high velocity diffuser" units shown for application in ceiling or wall and at least one ceiling unit incorporated lighting along with air control. The register-diffuser shown with the "jet furnace" and manufactured by Anemostat was particularly interesting because in this unit a small volume of high temperature, high velocity air draws room air into the register and mixes it with hot furnace air to produce customary air movement within the room.

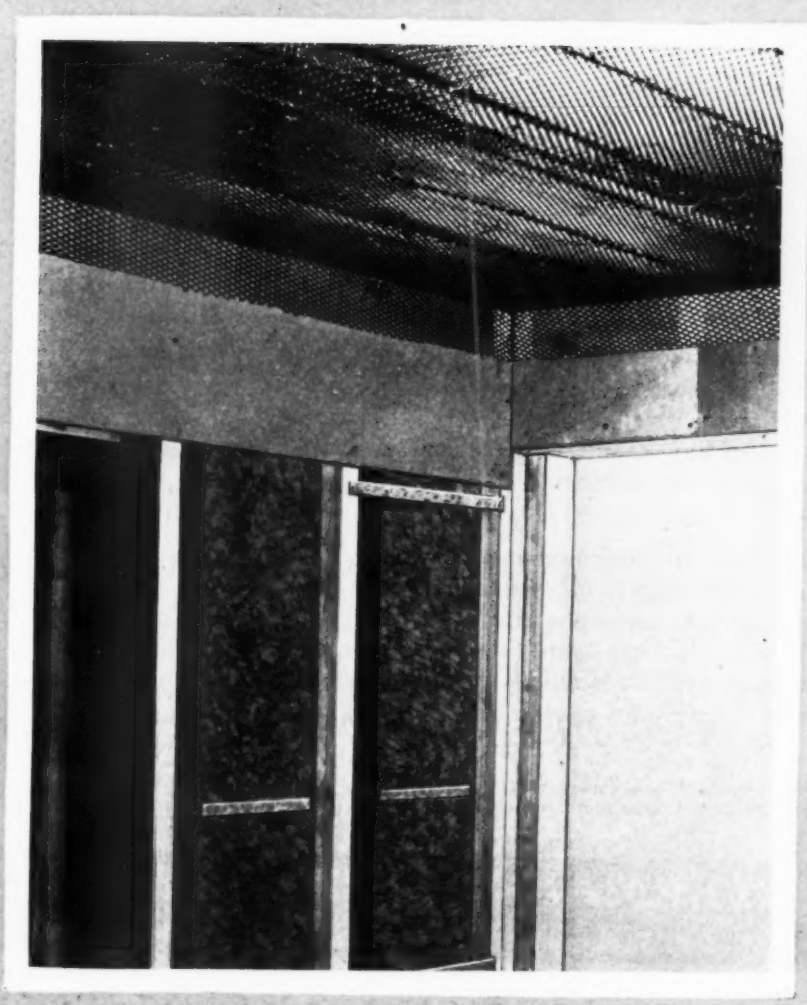
All types of devices for cleaning the air were displayed—the usual replaceable filters, cleanable filters of several materials, cleaners of the washer type and, of interest, electric cleaners of sizes suitable for incorporation in residential warm air systems. Newest cleaning unit was the "Teg" (trietheylene glycol) conditioner which both cleans and controls humidity by reason of special properties of this material when put in solution with water and affords some sterilizing qualities. A few sterilizing units were included in the displays of heating equipment manufacturers.

Small heaters of the space and circulating types were in evidence everywhere—possibly because the industry sees in the small low heat loss house now being built everywhere a ready market for the low cost heater which requires no basement or utility room. There were heaters for oil, coal and gas and one new type specifically for prefabricated houses is designed to be placed in an outside wall, projecting from the wall and using an air intake for combustion and an exhaust flue placed at the rear of the unit. This eliminates any need for a chimney or stack.



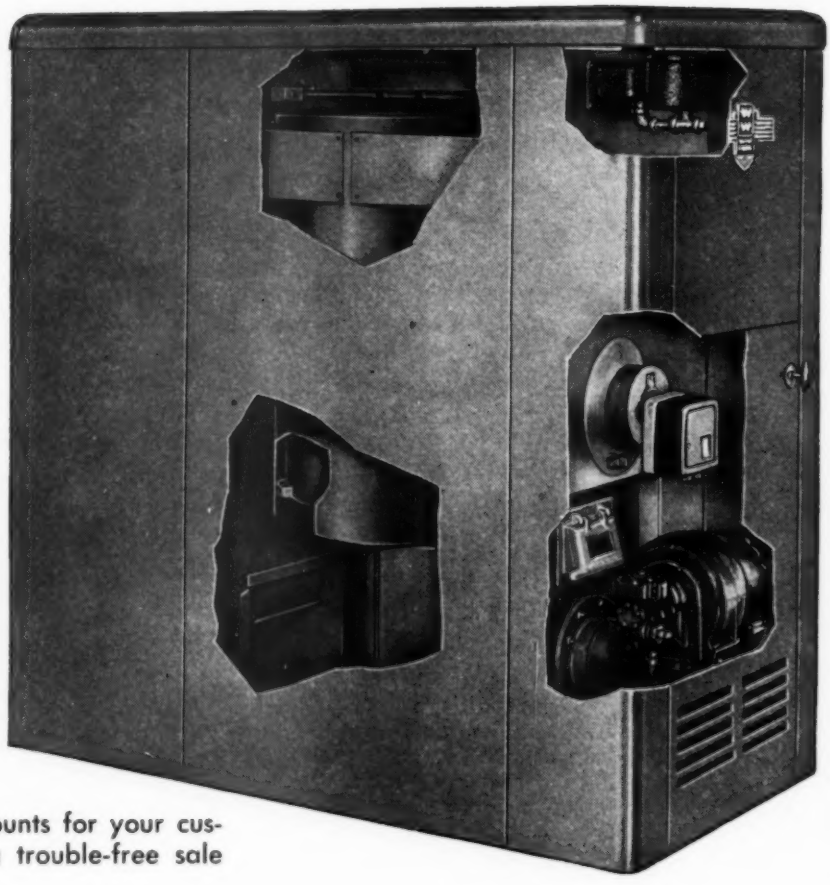
RESIDENTIAL AIR CONDITIONING *Section*

DEVOTED TO HOME AND SMALL COMMERCIAL AIR CONDITIONING



Waterbury

Oil Fired Air Conditioner



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The Casing
That Counts
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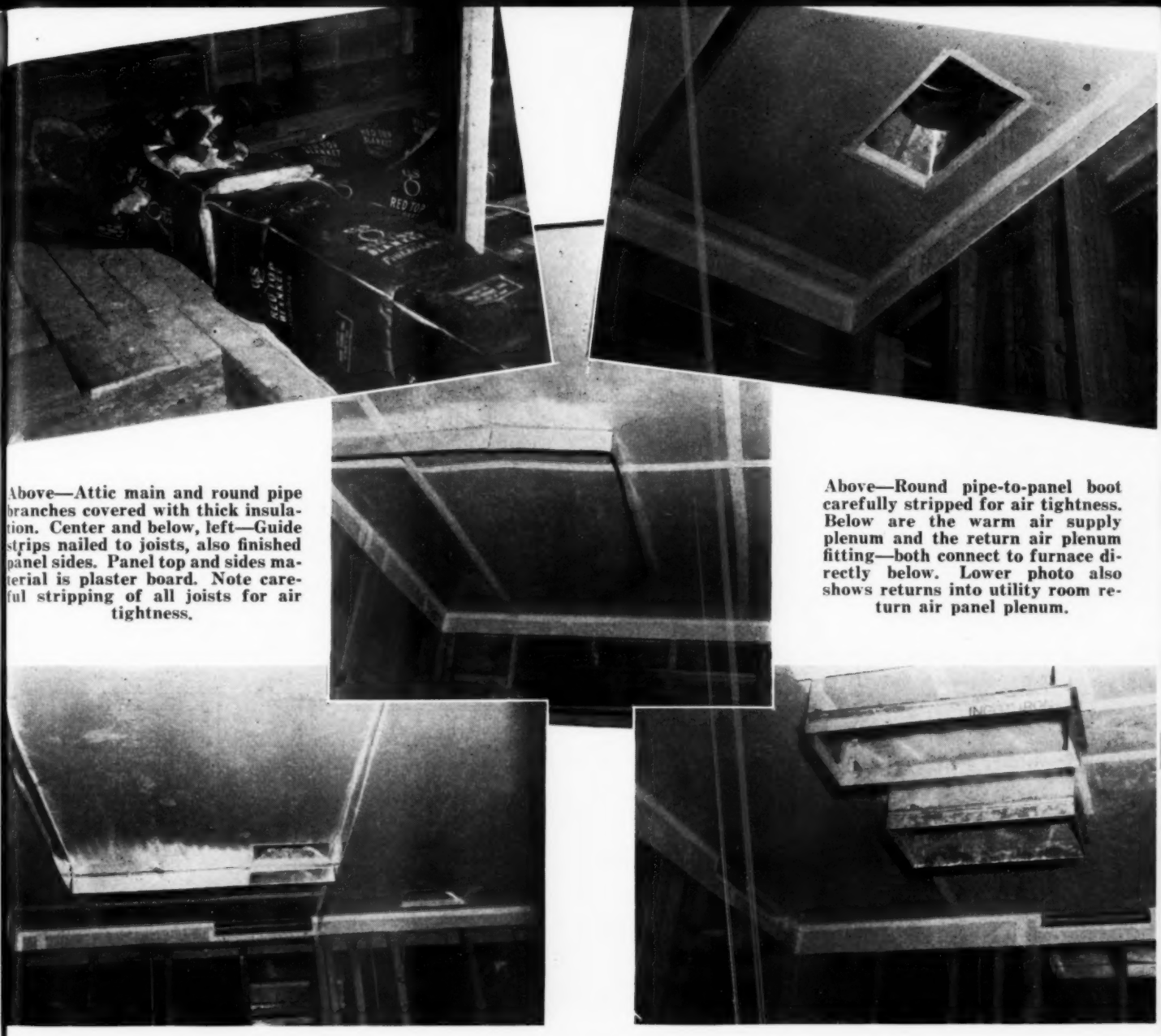


Above—Attic main and round pipe branches covered with thick insulation. Center and below, left—Guide strips nailed to joists, also finished panel sides. Panel top and sides material is plaster board. Note careful stripping of all joists for air tightness.

Above—Round pipe-to-panel boot carefully stripped for air tightness. Below are the warm air supply plenum and the return air plenum fitting—both connect to furnace directly below. Lower photo also shows returns into utility room return air panel plenum.

A Warm Air Ceiling Panel System

AT the December meeting of the National Warm Air Heating & Air Conditioning Ass'n—in 1943—H. F. Randolph of the International Heater Co. presented a paper describing his company's experiments with a ceiling warm air panel heating system in Utica, N. Y. This was one of the first announcements that the warm air industry was investigating means of heating by low temperature panels—using warm air as the heating medium.

In the time since that paper was presented the International Heater Company has built and tested other house installations and, last year, announced a licensing system under which contractors can use the company's data and patented system (Panelaire) and also released a complete design manual which, by means of precalculated Tables, eliminates all the intricate mathematical calculations which have normally been necessary to determine air temperatures and cfm's for panel heating.

Last year, in Toledo, Ohio, the R. B. Johns Company specified warm air ceiling panel heating systems in a number of small, basementless houses. Faunce & Faunce, Toledo warm air heating and sheet metal contractors successfully bid the work and obtained from International Heater Company completely worked out plans and specifications for the various houses in the project.

The houses differ slightly in appearance, but in general are one story, basementless houses with wood framing and siding or asbestos shingles, pitched roofs, insulated walls and ceiling, approximately 2,000 sq. ft. of floor area, approximately 85,000 Btu heat loss, normal glass areas.

Flow of Air

The first floor plan—which is also the layout plan for the ceiling panel—shows how the air is distributed through the panels. The dotted lines indicate the partitions which guide the flow of air after the air leaves the supply boot until it enters the return air plenum. Note on the plan that practically every room has its own heating panel and each panel has its own supply and return exit.

In this system air distribution from the furnace is all overhead supply through the attic using rectangular mains and

round pipes from the straight-up plenum. A photograph shows the attic pipes and the heavy insulation around them. The cfm through each pipe is, as stated, determined from Tables in the manual and the pipes sized accordingly.

A feature of this method of individual room supply and room panels is the flow of warmest air along cold outside walls—the air as it cools then flows above the inside areas of each room or panel.

After the air has given up heat—the air temperature drop is calculated to be from about 135 deg. to 85 deg. in the panel —the air is exited to a common return. In the house shown on the plan, exits are into the T-shaped hall through openings above room doors. To form the return plenum the hall ceilings are suspended 6 inches below the joists. This same depth of return panel is carried into the utility room. Thus the coolest air is above areas requiring the least heat supply.

Panel Construction

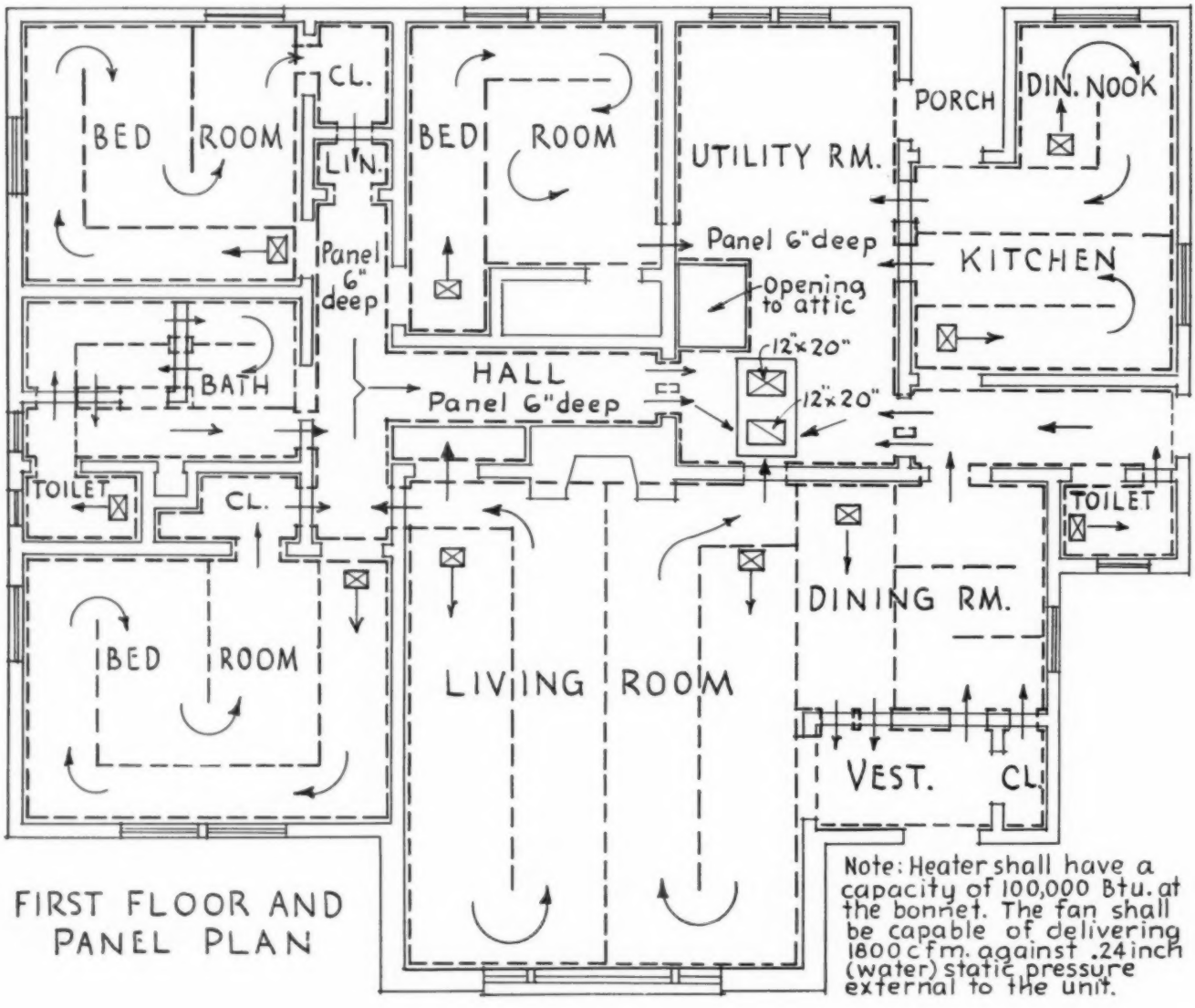
The construction of a typical ceiling panel is as follows: to the bottoms of all joists a complete gypsum board ceiling is nailed with ends butted along joists and all seams sealed with 2-inch wide, 12-pound or heavier asbestos paper applied with a dry paste flour (see photos). The sides of the panel are formed by nailing a 3¼-inch strip of gypsum board to the studs around the room (see photo).

Next the guide strips (dotted lines in plan) are nailed to the joists following chalk marks. These guide strips are L-shaped galvanized iron, 30 gauge or heavier, formed in any convenient length. Where more than one length is required, the ends are lapped several inches and the lapped metal securely nailed into the joists. These guide strips are made of 4-inch wide metal, flanged ¾ of an inch for nailing.

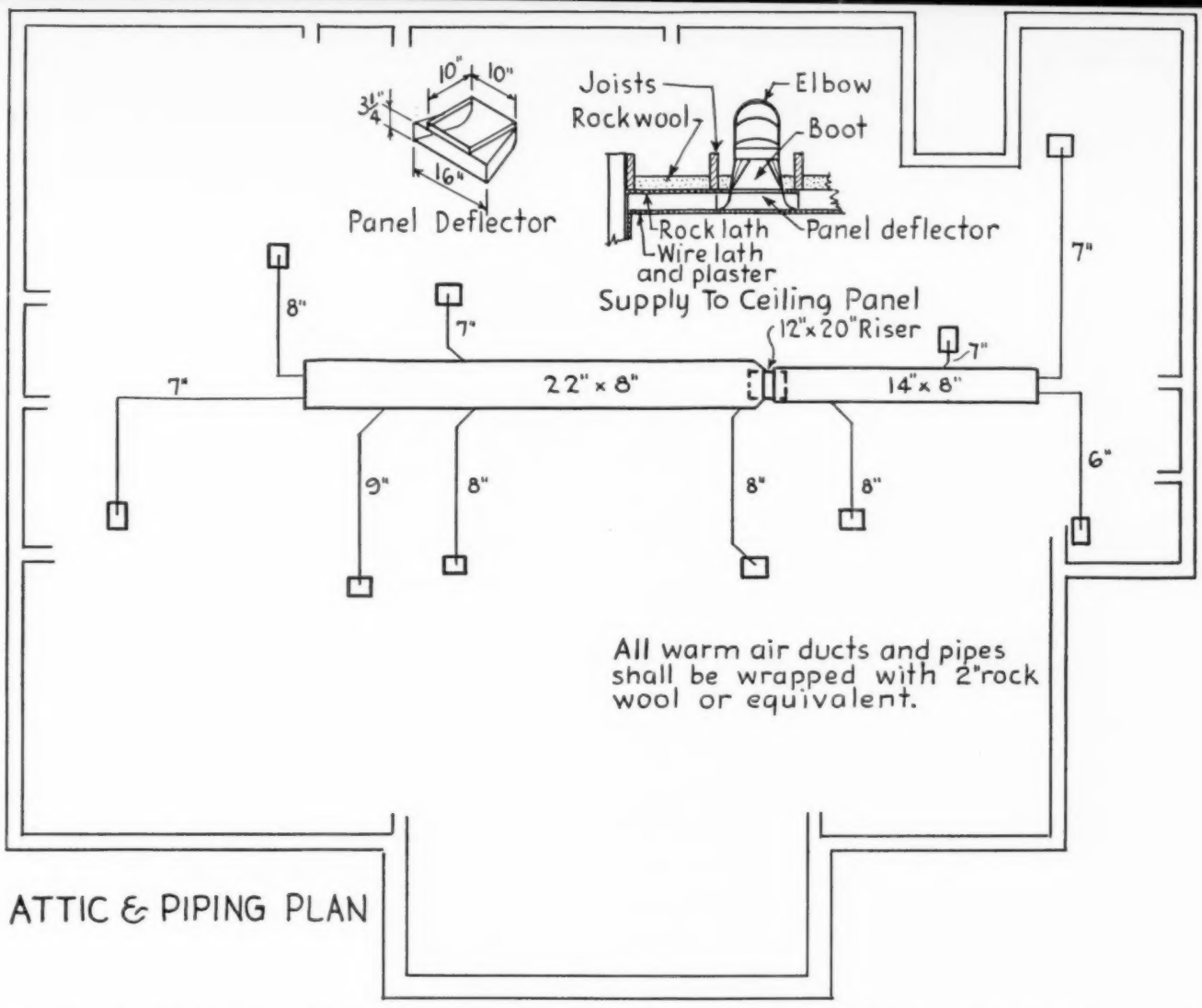
In these houses with overhead supply, the round pipe ends in an elbow to which is attached a round to square boot, followed by a "panel deflector" (see detail on attic plan). This deflector is a fitting whose purpose is to "spread" the air from the boot's small circular area into a thin "fan" which fills the panel space.

Where the furnace is in a basement, with customary wall stacks leading up to the panel, an elbow connects the stack with the panel and no special means is employed to spread the air.

The panel is now ready to close in. Along joists and in straight rows on alternate joists, 1½-inch staples are partly driven into the joist. These are to hold the hangers for the finished ceiling. The hangers are 7 gauge wires 3¼ inches long with a hook on the lower end and a 90-degree bend on the other. The bend is slipped into the staple and the staple driven tight. The hanger is then bent perpendicular. Into the hooks at the lower end of the hanger a 5/16-inch round



FIRST FLOOR AND PANEL PLAN



rod is placed and tied by wire saddle ties. It is recommended that these rods be cut to the exact length of the room so as to be continuous.

Ordinary metal lath is then wire-tied to the rods. The metal lath is either turned down around the edges ot the room or "cornerite" is used. The ceiling is now ready for the three coat plaster—a scratch coat to get the bond to the metal lath, a brown second coat and the finish coat which is smoothed. The total plaster thickness is approximately ¾ of an inch.

No Cold Rooms

In all these ceiling panel systems one feature is worthy ot mention. As stated, practically every room has its own panel which, in turn, has its own supply. Thus even such small rooms as a dining nook, a toilet, and the bath can have its own panel. Also there are no cold ceilings—hence no cold rooms—in the house. In the house shown, the vestibule and closet, each bed room closet, even the linen closet has a warm ceiling secured by incorporating that ceiling in the panel of one of the major rooms. The living room has two supplies and two panels.

Engineering Design

The total heat loss of the house shown is just under 85,000 Btu. The heat loss of each room is shown in Table 1. These losses are calculated from standard factors for areas of floor walls, glass, etc. The top of the panel is insulated with about 4 inches of fill type insulation.

Following the recommendations of the Panelaire manual, the bonnet air temperature is calculated as 140 degrees. The actual air temperature as the air enters the panel is calculated by assigning one quarter degree drop for each foot of actual pipe length.

With the bonnet air temperature of 140 deg and the room panel temperature as shown in Table 1 and the actual length of the pipe from bonnet to panel known, another table in the manual gives the cfm required for each panel. These cfm requirements are also shown in Table 1. The manual also has precalculated tables showing the sizes of rectangular stack or round pipe required for .10, .12, .15-inch static pressure arranged by room cfm's. From these tables the sizes of the

TABLE I

Room	Btu	Cfm	Max Air Temp Entering Pane
Dining, Living	24000	630	135 Avg
Vestibule	5360		
Toilet	2280	110	135
Hall	3000		
Dining Nook, Kitchen	14700	304	135 Avg
Bed	7520	158	134
Bed (Rear)	9460	209	132
Bath	5130	115	131
Bed (Front)	12540	274	132
	83990	1800	

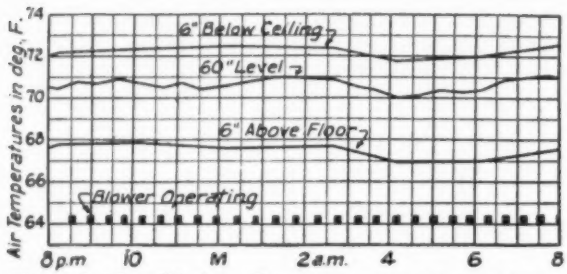


Chart 4—Graphic log of average room temperatures at three levels on a 12-deg day. Note regularity of blower operation. Blower operation also denotes operation of firing device.

branches were determined—sizes are shown on the attic plan.

To show how this works out, the living-dining-vestibule area has a heat loss of 29,360 Btu and a cfm requirement of 630. Three supplies are suggested so the 630 cfm is equally divided into 210 cfm for each branch and at .12 inch static each branch must be 8 inches in diameter.

With a total heat loss of 83,990 Btu, a 100,000 Btu capacity oil-fired furnace was specified. For the total cfm of 1800 a somewhat larger blower than might be used in a straight convection system was specified. As for velocities through the panel, one of the living room supplies delivers 210 cfm to a space in the first panel section measuring 3¼ inches deep by about 51 inches wide or 1.15 sq. ft. so the velocity at this point should be about 180 fpm. Since the areas formed by the guide strips are all approximately the same width (as shown on the first floor plan) the velocities throughout all the panels are about 200 fpm.

Comfort Results

No tests have been run on this particular group of houses. But in one of the International Heater Company's early test houses an exhaustive series of tests disclosed the operating and comfort characteristics of these warm air ceiling panels. The important features are:

(1) With intermittent firing and fan operation and with ¼-inch plaster on metal lath, room temperature gradients were found to be as follows: Observations during 12 hours with readings taken at the 5 ft level and at the 6-in level above the floor and at 6 in below the panel showed an average of 67.5 F at 6 in above the floor and a spread of 0.6 F below to 0.4 F above this average. (Chart 4.)

The average of all rooms at the 5 ft. level was 70.7 F and a spread of 0.7 F below to 0.4 F above this. The average of all rooms at 6 in below the panel was 72.0 F with a spread of 0.4 F below to 0.3 F above.

During this period there were 26 cycles of operation totalling 3 hrs and 49 min with an average *on* period of 8.8 min and an average *off* period of 17.6 min.

(2) There was some expectation of temperature overrun due to the heat storage of the panel. On a 16 deg day and with panel and house cooled down to around 55 to 60 deg the system was operated continuously for about 4½ hrs. During the period the average temperature at the bonnet was 130 F, the average of air entering the panels was 123 F, the average of air leaving the panels was 85 F. For 50 minutes after the thermostat was satisfied and the burner stopped, the temperature of the air and all surfaces of the rooms continued to rise, but the panel cooled rapidly. The overrun was not excessive as shown in Chart 1.

(3) The results shown in (2) above indicated that nothing more elaborate than a conventional room thermostat was necessary to give good control of the system.

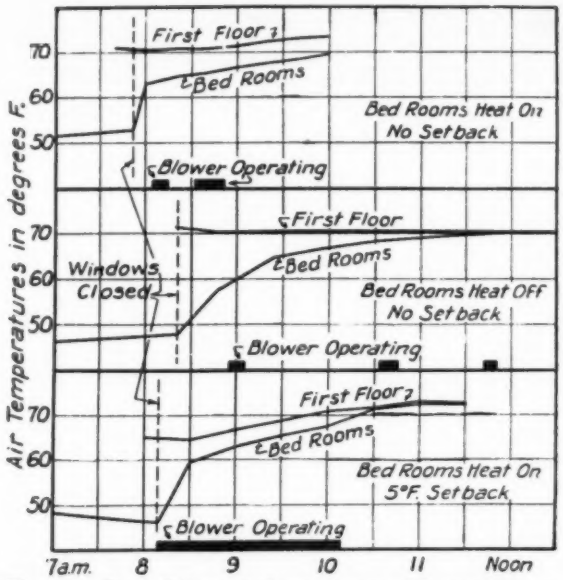


Chart 2—Log of three bedroom tests with panel operating and windows open during the night and no set back (top); panel not operating during night and windows open and no set back (middle); panel operating, windows open, 5-deg setback (bottom). Feature is quick pickup.

(4) Temperature pickup rate with a ceiling panel constructed as described is not as slow as sometimes thought. With an outside temperature of 30 F and the heat turned down 5 deg and windows open during the night, room temperatures were 45 deg at 8 a.m.—within 90 minutes room temperatures were up to 70 deg. Chart 2 shows three test runs on temperature pickup.

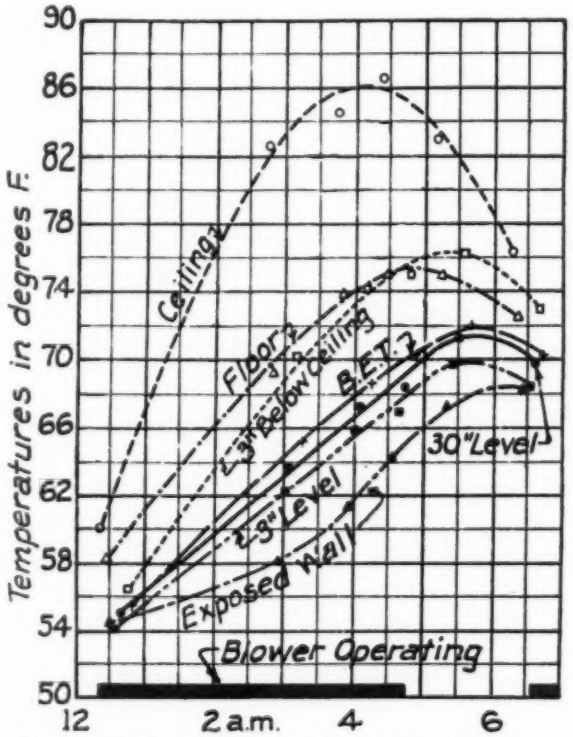


Chart 1—From a cold start with air, walls, floor about 56 deg the system operated for 4½ hours. Note rapid rise in ceiling panel lower surface temperature and parallel rise in floor, wall and air temperatures. Note quick cooling down of ceiling after blower stopped and coasting of floor, wall and air temperatures. This excellent response made possible the use of conventional thermostatic control.

AGA Report of Natural Gas Reserves

THE directors of the American Gas Association, at the suggestion of its Natural Gas Department, authorized in 1945 the formation of a "Committee on Natural Gas Reserves." Its function was to be the preparation of reliable annual estimates of the proved reserves in the United States of natural gas and its derived liquids.

At their first meeting in October, 1945, the committee members decided that each would submit the reserve estimate of an assigned district, each member acting as chairman of sub-committees consisting of individuals familiar with the natural gas occurrences within their local areas. In pursuance of this, the committeemen invited the aid of men experienced in the estimation of reserves, up to the present time, fifty-four geologists and engineers have cooperated in this work.

The committee's first estimate of the natural gas reserves of the United States is as follows:

"The total proved recoverable reserves of natural gas in the United States as of December 31, 1945, were approximately 148 trillion cubic feet. These reserves are found in three types of occurrence:

(1) Non-Associated gas (free gas not in contact with crude oil in the reservoir) 111 Trillion Cubic Feet
(2) Associated gas (free gas in immediate contact with crude oil in the reservoir) 20 Trillion Cubic Feet
(3) Dissolved gas (gas in solution in crude oil in the reservoir) 17 Trillion Cubic Feet

A break down of these figures by states is shown in the accompanying table. All volumes were calculated at a pressure base of 14.65 pounds per square inch, absolute, and at a standard temperature, of 60° F. The recovery factors and abandonment conditions assumed in the individual fields differ as widely as the characteristic circumstances in each field.

This AGA committee is cooperating with the Committee on Petroleum Reserves of the American Petroleum Institute, whose annual published oil estimates have been accepted since 1935. The reserves herein classified as "dissolved gas" have been estimated to a large degree by that group. Those light hydrocarbon liquids which are gaseous in the reservoir but liquefiable at atmospheric pressure and temperature are not included in this estimate. Natural gasoline, condensate, various plant products and liquefied petroleum gases fall in this category. Both committees have agreed to group these lighter liquids, which are not crude oils, under the term "natural gas liquids." It is planned to include an estimate of the reserves of these liquids in the annual report for December 31, 1946. The committee will investigate the natural gas and natural gas liquid reserves as of December 31, of each year and report these figures early in the following year. Annual production figures will be included.

ESTIMATED PROVED RECOVERABLE NATURAL GAS RESERVES IN THE UNITED STATES AS OF DECEMBER 31, 1945

Gas Reserves in Millions of Cubic Feet

States	Non-Associated	Associated	Dissolved	Total
Alabama	—	—	23	23
Arkansas	494,866	149,471	225,349	869,686
California	3,653,704	3,091,952	4,110,051	10,855,707
Colorado	158,422	126,783	111,077	396,282
Florida	—	—	6	6
Illinois	3,000	55,000	210,000	268,000
Indiana	4,000	8,000	5,000	17,000
Kansas	12,825,868	218,984	205,753	13,250,605
Kentucky	1,366,800	—	100,000	1,436,800
Louisiana	16,043,932	2,650,000	1,154,600	19,849,393
Michigan	5,431	—	3,500	8,931
Mississippi	1,621,382	270,332	116,145	2,007,859
Missouri	10	—	60	70
Montana	1,202,521	—	—	1,202,521
Nebraska	—	—	375	375
New Mexico	2,680,133	1,930,300	579,876	5,190,309
New York	75,000	—	1,000	76,000
Ohio	581,800	—	45,000	626,800
Oklahoma	7,716,351	1,138,767	1,224,820	10,079,938
Pennsylvania	465,000	—	55,000	520,000
Texas	59,381,205	10,316,402	8,609,069	78,306,676
Utah	81,323	—	—	81,323
West Virginia	1,818,300	—	110,000	1,928,300
Wyoming	565,306	164,507	86,950	816,763
Total	110,714,354	20,121,359	16,953,654	147,789,367

NOTES:
VOLUMES ARE REPORTED AT A PRESSURE BASE OF 14.65 POUNDS PER SQUARE INCH, ABSOLUTE, AND AT A STANDARD TEMPERATURE, OF 60° F.
"NON-ASSOCIATED" INCLUDES ALL FREE GAS NOT IN CONTACT WITH CRUDE OIL IN THE RESERVOIR.
"ASSOCIATED" INCLUDES ALL FREE GAS IN IMMEDIATE CONTACT WITH CRUDE OIL IN THE RESERVOIR.
"DISSOLVED" INCLUDES ALL GAS IN SOLUTION IN CRUDE OIL IN THE RESERVOIR. THE ESTIMATES FOR THIS GAS WERE BASED ON THE A. P. I. COMMITTEE ON PETROLEUM RESERVES AND WERE ESTIMATED JOINTLY BY THE A. G. A. AND THE A. P. I. RESERVES COMMITTEES.

Correct Practice In Oil Heating

Part IV [*The Heating Survey—How necessary it is for a good installation—The way to go about making a survey—Just what details it covers.*]

By J. J. Mirabile

Vice President of Engineering—Harold E. Sweeney Corp., Philadelphia

A CAREFUL survey is important. In fact, it is essential when an oil burner is to be installed in a furnace designed to burn coal. When installations are made without a survey, they very often are unsatisfactory.

One bad installation may result in a need for service calls, labor and material required to correct the job which will cost several times more than the anticipated profit. This condition may lead the customer to believe that the dealer does not know his business, and regardless of what improvements or corrections are made to the installation, the customer will feel that he has been sold an inferior piece of equipment. It will be difficult to alter this attitude toward the installer. Therefore, an intelligent survey is the first step toward a satisfactory installation, and a customer solidly sold on oil heat.

Method of Procedure

Every oil heating dealer should make it his business to have a trained man in his organization to make surveys. If this is not practical, the dealer himself should be able to make a competent survey, using the information, data and method described in this article. Assume that survey is to be made of an eight room house heated by a coal-fired gravity warm air heating system. Every item in the survey form will be dealt with, why it is needed, and how to use the information obtained. When a survey is made of the existing gravity warm air furnace fired with coal, the customer's heating system and other conditions affecting the operation of the proposed oil burner installation should also be checked.

After filling in the first two lines of the Survey Form—Name, Address and 'phone number—the following spaces are filled as follows:

TYPE OF DWELLING—residence, store, school, etc.

IS HEATING SATISFACTORY?—It is important that the customer be questioned about the operation of the heating system. If the system heats satisfactorily with coal, it should also heat satisfactorily with oil.

There may be exceptions to this statement, such as, a gravity warm air system with an outside air intake. The air intake worked well with the constant operation of a coal fire. However, it may not be satisfactory with an oil burner because the furnace is intermittently fired. When the burner is not operating cold air may be forced through the furnace on windy days, causing very uncomfortable drafts in the home. This outside air duct may be operated with automatic dampers. If this is not practical, the outside air duct can be disconnected and cold air returns installed to insure good circulation. The sheet-metal man who is alert can sell cold air returns and any necessary new leaders with the oil burner. When a faulty heating system is corrected the customer is rendered an invaluable service. Remember, an oil burner will not correct a faulty heating system.

TYPE OF HEATING SYSTEM—Gravity—Forced Circulation—Pipeless

This information is for the files. It may be referred to at a future date when the job is sold to determine the proper limit control. The limit control sent with the installation kit should have a long element on a pipeless furnace and a standard element on a gravity furnace. On a forced warm air job, a control with dual circuits is required, a high limit circuit for the oil burner and a circuit to control the fan.

PRESENT FUEL

This information will indicate if a stoker or existing oil burner must be removed before the oil burner can be installed. If an oil burner is being replaced with another oil burner, a tank and tank pipe fittings are not required. The new oil burner will be connected to the existing basement tank.

YEARLY FUEL CONSUMPTION

This can be used to compare oil heating cost with the previous fuel costs. These figures can be used when future prospects ask for comparative figures. These figures can also be used to check workmanship. If the installation was poor, higher fuel consumption over the previous method of firing may result.

NAME OF FURNACE

The furnace trade name should be written in this space.

MANUFACTURER

This information is usually on the door or furnace front.

MODEL OR SIZE

The number, furnace name and manufacturer are necessary to determine the number of Btu the furnace will deliver. This information is obtained from the manufacturer's catalogue.

RATING

Furnaces will deliver just so many Btu at the bonnet. This is called "Bonnet Rating." Some furnaces are rated in square inches of leader area.

A furnace with a fan to circulate the air will deliver more Btu. Therefore, the bonnet rating of a forced warm air furnace will be greater than the same furnace used on a gravity warm air system.

DIAMETER OF GRATE

This is necessary to determine the space available to build the combustion chamber. It is also a check on the size when checking the furnace number in the manufacturer's catalogue.

CONDITION OF FURNACE

If the fire pot is cracked, or if the furnace casing is in a dilapidated condition, the furnace must be repaired before a burner can be installed. The furnace must be tight. Resealing is recommended in practically all cast iron furnace installations.

ARE PIPES COVERED?

This is important if leader pipes go through unheated spaces. If insulation is required, sell the purchaser Air Cell covering.

FLUE PIPE DIAMETER, LENGTH, NUMBER OF ELBOWS, AND CONDITION

If the pipe is in poor condition this information is necessary so that the flue pipe and ells can be delivered with the kit.

This information is also used to determine the size of the draft regulator. The satisfactory operation of a heating system depends on a good draft. Do not install an oil burner in a furnace connected to a bad chimney.

DISTANCE BETWEEN JOISTS AND TOP OF FLUE PIPE

If less than 18", asbestos board can be sent along with kit to protect the joists.

(Continued on Page 85)

HEATING SURVEY

Name FREDRICK DROGE Telephone ART 1234
Address 5730 W. JUNIPER ST. City PHILA.
Type of dwelling RESIDENCE Is heat satisfactory YES

TYPE OF HEATING SYSTEM

HOT WATER ☐	STEAM ☐	WARM AIR ☑
Gravity ☐	Vapor ☐	Gravity ☑
Forced circulation ☐	One pipe ☐	Forced circulation ☐
Open ☐	Two pipe ☐	Pipeless ☐
Closed ☐		

Present Fuel: Coal ☑ Stoker ☐ Oil ☐ Gas ☐
Yearly Fuel Consumption: Tons of coal 10 Gallons of oil ____ Cost $150
Name of boiler or furnace MUELLER STEEL Manufacturer L. J. MUELLER
Model or size 224 Number of sections ____ Round ☐ Square ☐
Rating: Hand fired 6210" ☐ Gross load Automatic fired ____ ☐ Gross load
Grate Size: Length ____ Width ____ or Diameter 20½
Condition of boiler or furnace EXCELLENT Are pipes covered YES
Flue pipe diameter 9" Length 4' No. of elbows 2 Condition POOR
Distance between joists and top of flue pipe 12" inches
Boiler pitted ____ Length of pit ____ Width ____ Depth ____ Drain ____
How is water heated: Gas ☐ Coal ☐ Electric ☐ Side-arm heater ☐ OIL ☑
Name of side-arm heater ____ No. ____ Size ____ Capacity ____
Size of hot water tank 40" x 60" Capacity 40G. Vertical ☑ Horizontal ☐

OIL STORAGE TANK DATA

Underground ☐ Above ground outdoors ☐ In basement ☑
Which tank will go in 42 x 22 x 66 If turn in passage, sketch exact dimensions.
Fill pipe location WEST SIDE Vent pipe location WEST SIDE
Thickness of walls to be drilled 13" BRICK etc.
Location — Electric meter BASEMENT Volts 110 D. C. ☐ A. C. ☑
Location — Thermostat LIVING ROOM

DATA FOR OIL FIRED DOMESTIC WATER HEATER

____ Bath tubs x 20 = ____ Lavatories x 2 = ____ Showers x 75 = ____
____ Kitchen sinks x 10 = ____ Laundry tubs x 15 = ____ Automatic washer x 75 = ____
Total Gals. ____ x ____ = ____ + ____ = ____
Demand factor | Probable gallons per hour | 2 | Gallons required first hour

Special Instructions: THE TANK MUST BE LOCATED AT THE NORTHWEST CORNER OF THE BASEMENT, ALONG THE WEST WALL. THE FILL & VENT THROUGH THE WEST WALL BEHIND SHRUBBERY NEAR DRIVEWAY.

Survey made by WILLIAM CORNEL Date 12-1-46
Approved by JJM OK Date 12-1-46

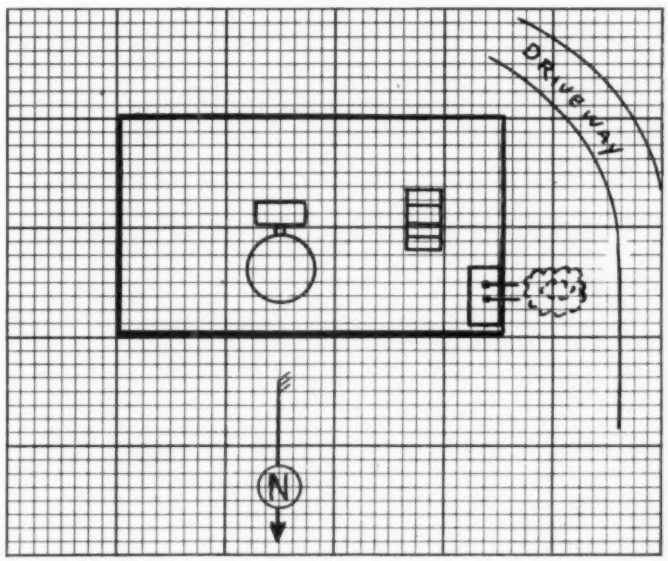
ROOM	FOR STEAM OR HOT WATER RADIATORS					WARM AIR LEADERS GRAVITY SYSTEM					
	Col.	Tube	Height	Sections	Sq. Ft.	8"	9"	10"	12"	14"	Square Inches
LIVING								✓			78.54
"								✓			78.54
DINING								✓			78.54
BEDR #1								✓			78.54
BATH						✓					50.20
BEDR #2							✓				63.60
KITCHEN								✓			78.54

Total ____ Sq. Ft. Total 506.50 Sq. In.

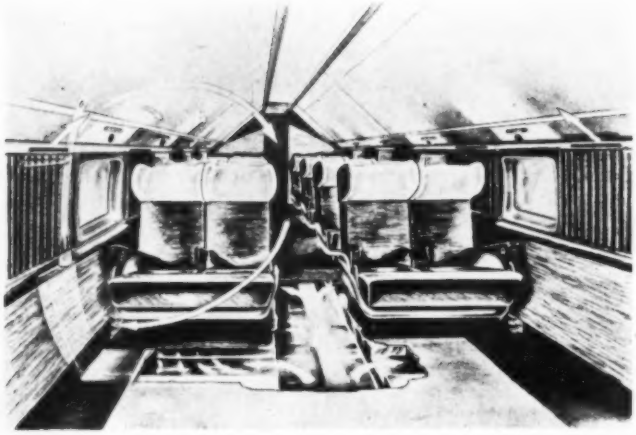
Radiation Load ____ Sq. Ft.
Hot Water Load ____ Sq. Ft.
Net Load ____ Sq. Ft.
____ % Piping Tax ____ Sq. Ft.
Design Load ____ Sq. Ft.
____ % Pick-Up Allowance ____ Sq. Ft.
Gross Load ____ Sq. Ft.

Total Sq. In. x 136 = B.T.U. at Registers
506.5 Sq. In. x 136 = 68,884
Plus 25% Duct Losses 17,221
Gross B.T.U. 86,105
Model Burner or Unit Required $\frac{86,105}{140,000 \times 65\%} = .95$ Gph ARTISAN C55

⅛" SQUARES IN THIS AREA FOR SKETCHES



1 SQUARE = 1'



Warm air from the special heater is conveyed through a main duct under the aisle—branches then lead to side wall panels for warm air panel effect—finally, the air enters the interior at hat rack level as in a conventional convection system.

New Passenger Planes Heated By Convection-Panel System

IN the new warm air industry research residence being built at the University of Illinois (July AA, page 59) it is proposed to test a system of warm air panel heating in which the air which heats the panel will be introduced into the rooms of the house to obtain ventilation, air filtering and humidification.

The desirability of such a system has been brought to attention because in many of the closed panel heated systems there is no integral means for adding humidification or cleaning the air and ventilation must be obtained by opening doors and windows.

The same objections to closed panel heating have already been encountered and remedies used in other fields of heating. For instance, in the new types of commercial aircraft, panel heating was used; it was found satisfactory for maintaining temperatures, but lacking in satisfactory ventilation and humidification. While, in aircraft, the absence of satisfactory humidification was not too serious, it was found that absence of satisfactory ventilation was serious.

In the new Douglas DC-6 now coming off the production line, panel heating is combined with ventilation, filtering, humidification a combination of panel heating with introduction of the warming air into the cabin. In this plane the same system of air distribution will also be used for cooling—the air being cooled instead of being heated. The system in use in the DC-6 employs a gasoline fuel aircraft heater developed by Surface Combustion Corp. This heater is specially designed, large capacity, ram air operation unit ranging up to 310,000 Btu per hour output.

Duct Supply System

A supply duct running the full length of the cabin under the center aisle carries fresh air and heat from the combustion heater, which are blended at a maximum temperature of 85 degrees. Ducts branch off from the main duct to side panels at every seating section. All ducts are so built that the cabin floor plates form the tops of the ducts. In this way a large portion of the cabin floor is radiant, thus eliminating cold floors. The branch ducts carry the heat to panels between the outer skin and the cabin.

The tempered air which has provided the warmth for radiant heating through the duct and panel system becomes ventilating air as it is discharged from the panels at a point just below the hat racks in the cabin. Since the ventilating air has a velocity no greater than 35 feet per minute where passengers are located, its movement is imperceptible and there are no drafts. Cooled air is distributed through the same system in warm weather. The ventilating air leaves the cabin through grilled openings in the sidewalls near the floor of each outside seat. On sleeper planes, a special duct system is used to discharge overboard the spent air from each upper and lower berth.

The Janitrol aircraft heater supplying cabin warmth operates only when air under pressure from the superchargers is at a temperature insufficient to heat the cabin. Thermostatic controls switch the heater on and off, when heat is required, to maintain a constant cabin temperature. The capacity of the heater is sufficient to hold an even 70 degrees with an outside temperature of 40 degrees below zero without benefit of heat from the pressurized cabin superchargers. The same unit also supplies heat for anti-icing of the windshield and for the cockpit. A system of dampers and automatic controls makes it possible to recirculate up to 50 per cent of the cabin air through the supply system if necessary to meet unusually severe outside temperature conditions.

F.H.A. Reports on House Insulation And Basementless Houses*

THE basementless house is a problem which recent experiences have brought into clearer focus and from which much has been learned. In early efforts to cut housing costs F.H.A. suggested, and even went so far as to advise builders to eliminate basements, especially in those areas where they were and still are traditional. Although one hates to admit an error, it now appears that we of F.H.A. were laboring under a false idea when we thought the basementless house was an economical measure. Sales resistance was the first reaction experienced by builders who had the courage to build a few such units. Regardless of how sound a structure may be or how well designed, if it does not find public acceptance, it is folly to continue to build it.

The next thing learned about the basementless house was that its foundation walls and footings cost about the same as those for a basement house, especially when the footings extend down three and one-half feet or more below grade to resist frost. It was also found that extra and costly floor area had to be added to the basementless units to accommodate heating facilities, laundry equipment and storage space. Furthermore, it was evident that more expensive types of heating equipment would be necessary if located on or above grade. Cold floors in winter are another common complaint frequently received from those living in houses without basements.

Slab Floor No Solution

There has been considerable effort to overcome some of these deficiencies by the use of concrete slabs at grade level. This is one solution to the cold floor problem, but it is not the answer to the others. It has been learned that a slab must not continue out under the exterior walls, but must be insulated at the inner face of the walls to prevent loss of heat from the outer edge of the slab. A real drawback to the use of the slab is that it does not provide access to plumbing lines under the slab, or to piping which may be imbedded in it, such as is customary in panel heating. It is evident that considerable research and experimentation will be required before the slab idea can be generally adopted, except in those areas where climatic conditions make it not only logical but also desirable.

It has also been learned that much damage to equipment results from trying to cut operating costs. For instance, the cutting off of fans to save electricity and failure to change air filters when necessary are both causes for overfiring. This often results in damage to the unit and cuts its useful life. False economies of this character in rental projects usually result in heavy turnover of occupancy with considerable loss in income from vacancies. Something has also been learned about the vital need for venting certain types of heating equipment such as space heaters, especially when gas is used. Likewise, the venting of enclosed spaces for heating equipment and the provision of a source of fresh air for combustion purposes are essential to efficient operation.

Benefits of Insulation

The subject of insulation is highly important. Insulation now is both accepted and customary, and its extensive use during the war emergency made available much critical material for other vital war uses. As an industry, it has grown by leaps and bounds, primarily because it has offered so much for so little money. However, insulation must be intelligently used and properly installed if adverse effects on other parts of the structure are to be avoided. We all know what happens when water vapor penetrates insulation material, how important it is to maintain a vapor barrier, and when and where the barrier should be located. It is all very simple to specify or show on shop drawings how this can be accomplished, but, and in this case it is a very large but, how can the destruction of these barriers be overcome when the plumber, electrician and other mechanics are not prevented from hacking them to pieces while installing their respective equipment?

Effect on Summer Cooling

One more comment on the subject of insulation is pertinent: we have given much attention to its use against heat but not enough thought to insulations ability to resist cold penetration. This is a problem of how the insulation material is used and not by any means an inherent fault of the material. We have learned that whenever insulation is subjected to long spells of high temperatures, it will store up heat within itself to such a degree that its insulation value is impaired. To overcome this, the material must be opened to air circulation to permit its cooling off after the source of the heat is removed. This condition exists primarily in or under roof surfaces and it has been suggested that attic fans be used to expedite the cooling off process. This, however, is not possible in insulated flat roof panels. Moreover, experience with flat roofs in northern areas has demonstrated the need for hung ceilings and vapor barriers, not so much as to prevent heat penetration in summer, but to prevent condensation in winter.

**From an address "Some Things We Have Learned About Housing Construction" by Howard Leland Smith, Principal Architectural Advisor, Underwriting Division, Federal Housing Administration, Washington, D. C., presented at the "Housing and Heating Conference," Pennsylvania State College, State College, Pa.*

Simplified BTU Method for Estimating Heat Losses of Average Residences

By Mitchel Landau
Manager, Heating Division,
Allied Appliance Co., Boston

Glass Area	×80	=BTU
Net Wall Area	×20	=BTU
Cubic Contents	×1½	=BTU
		Total BTU for room

THAT'S all there is to it for most first floor rooms in an *average* residence. For top floor ceilings, cold floors, insulated walls and ceilings, etc., you will find additional figures in Table No. 1. These figures are for *estimating* purposes only. They should not be used for the design and installation of a heating system. Actual design requires the use of the precise methods outlined in the Guide of the American Society of Heating and Ventilating Engineers or the Codes of the National Warm Air Heating and Air Conditioning Ass'n.

The figures given in Table No. 1 may be used to *estimate* heat losses when the building is of the usual brick or frame construction in a location where the design temperature is 70° inside with outside 0°. (The basic factor used for construction in this table is .30 Btu per sq ft per hour per deg temperature difference.)

Here is how we obtain the figure 80 for glass area. The Btu factor for single glass is 1.13. The temperature difference is 70°. These two figures are constant. We may, therefore, combine the two multiplying 1.13 x 70 which equals 79.1. For easy remembering and mental calculations 80 is used.

Table No. 2

Windows one side—
Air Change = Cubic Contents

Windows two sides—
Air Change = 1½ x Cubic Contents

Windows three sides—
Air Change = 2 x Cubic Contents

We obtain the figure 20 for net wall area in the same manner. The Btu factor .30 multiplied by 70 equals 21. This is adjusted for simplification and becomes 20.

The cubic contents of the room is considered equal to the cubic feet of air per hour to be heated *when there are windows on one side of the room only.* When windows are on more than one side of the room, the cubic contents are increased in accordance with Table No. 2. The correct figure is then multiplied by 1½ listed under Air Change in Table No. 1.

This figure of 1½ air changes is a simplification of the factor .018 multiplied by 70 which would give 1.26. The larger figure of 1½ allows for loose windows and doors, as well as providing an easily remembered and easily used number.

These three figures for glass, wall, and air change are basic for all rooms. Some rooms have other exposures which must be added to the three basic figures. The figures for such exposures as top floor ceilings, walls with unheated rooms on the other side, cold floors, etc., will be found in Table No. 1. As Table No. 1 is designed for the *average* residence, no consideration has been given to fireplaces, glass-enclosed sun porches, or other special construction.

Table No. 1

Glass Area	
No Storm Sash	x 80
With Storm Sash	x 40
Net Wall Area	
Not Insulated	x 20
Insulated	x 7
Other Side Unheated	x 10
Air Change	
(See Table No. 2)	x 1½
Ceiling—No Insulation	
No Attic Space	x 20
With Attic Space (tight)	x 10
Ceiling—Insulated	x 7
Cold Floor	x 10

If you are located in an area where the design temperature difference is more or less than 70°, then all the figures in Table No. 1 will have to be changed. For example, if your design temperatures are –10° outside with 70° inside, the Btu factor should be multiplied by 80 instead of 70. Thus, .30 x 80 = 24 which can be adjusted to 25; a figure that lends itself to mental calculating simply by dividing by 4 and adding two ciphers.

In a community where the type of construction requires a Btu factor other than .30, the figure in Table No. 1 for Net Wall should be determined in accordance with the procedure outlined in this article.

Contrast of Methods

Here is a comparison between the accepted Btu method and this simplified method. A survey of one room gives us the following information:

Living Room, first floor—dimensions 15′ x 20′ x 8′

Exposed on one 15′ and one 20′ sides

Three windows 3′ x 5′—one door 3′ x 7′

Construction 8″ brick, furred, lath and plaster

No insulation—no storm windows

Standard BTU Method

Gross Wall Area	= 280 sq. ft.					
Glass Area	= 66 sq. ft.	x 1.13	x 70	=	5,220	Btu
Net Wall Area	= 214 sq. ft.	x .30	x 70	=	4,494	Btu
Infiltration	= 4,280 C.F.H.	x .018	x 70	=	5,393	Btu
Total					15,107	Btu

Simplified BTU Method

(Note Rounded-Out Area Figures)

Gross Wall Area	= 280 sq. ft.				
Glass Area	= 65 sq. ft.	x 80	=	5,200	Btu
Net Wall Area	= 215 sq. ft.	x 20	=	4,300	Btu
Air Change (Two sides per Table No. 2)	= 3,600 C.F.H.	x 1½	=	5,400	Btu
Total				14,900	Btu

Correct Practice Oil Heating — Mirabile

(Continued from Page 81)

FURNACE PITTED, ETC.

Sufficient space is necessary to service the oil burner. If the pit does not have a drain, the burner motor, etc., may be damaged if pit gets flooded. Call this to the customer's attention. Do not install a burner in a pit that gets flooded. If the pit is waterproof, instruct the installation men not to cut the concrete floor or trench the oil line.

OIL STORAGE TANK DATA — Underground, Above Ground, or in the Basement.

Locate the existing tank or where the new tank is to be placed.

WHICH TANK WILL GO IN?

Whether a 26″ or a 22″ tank will enter the existing doorway and down the cellar steps. If neither tank will go in, a welder will be required to cut the tank outside the building into sections, and re-weld it in the basement.

If there is a turn in the passage, give exact dimensions. This will determine whether a tank can be carried into the home and through a turn in the stairs or hallway.

FILL PIPE LOCATION AND VENT PIPE LOCATION

Such as North side, or Front, near steps, etc. Do not ask the customer to determine the location of the equipment. If the customer objects to the location selected, and no other space can be used, then explain to the customer why you selected that particular location and obtain his consent. This is not important if the customer tells you to install the job as you think best. You can do as your judgment dictates.

THICKNESS OF WALLS TO BE DRILLED

If sledge and Bull point chisel are required, this information will assist the installation men in going to the job better prepared to do the job.

LOCATION OF ELECTRIC METER, VOLTS DC & AC

Outside, Back Porch, or Basement, etc.

THERMOSTAT LOCATION, DINING ROOM, LIVING ROOM, ETC.

Mention the room in which the thermostat will be located.

The customer should be consulted when the location of the thermostat is selected. This procedure will save hours of labor for the installation crew The customer should be "sold" the proper thermostat location so that he will not stop the electrician when he starts to wire the thermostat.

The thermostat should be set in the living space, either the living room or the dining room. It should not be mounted in a drafty location, outside wall, over heat pipes or warm air risers. or cold air ducts in partitions. It should not be placed over a radiator, radio, light fixture or on a wall which forms the chimney. It should be mounted not more than 5′ above the floor, preferably 54″ above the floor level.

WARM AIR LEADERS—Gravity System

Write down the name of the room or rooms supplied by the leader and also write down the diameter of the leader.

From the table obtain the area in square inches of the leaders. Then total the area of the leaders in square inches and multiply this figure by 136. This will give the number of Btu the leaders are capable of delivering to the registers. To this figure add 25% to cover duct losses, etc. This last figure is the gross Btu required to satisfy the leaders connected to the furnace. However, bear in mind that the furnace bonnet rating must be large enough to be equal to or larger than the load connected to the furnace. The gross Btu are also used to determine the firing rate of the oil burner. This figure gives the nozzle size.

THE PROBLEM CORNER

Readers are invited to submit suggestions for these problems

How to Size a Gas Burner

American Artisan:

Can you help us with this problem? What are the requirements in a gas conversion burner for a 22-in. furnace with a Btu rating of 99,370 at the bonnet and 74,528 at the register? What is the correct way to figure the Btu output rating on conversion gas burners? Is the same method used on coal furnaces?

E. R., Illinois

Reply by
The Editors

You compel us to make certain assumptions in answering your questions. Ordinarily the capacity of a conversion burner (gas) is based on the Btu loss of the house and not the Btu capacity of the furnace. You do not tell us what the heat loss of the house is, but we assume that the furnace was correctly sized so that the minimum Btu capacity at the register is approximately equal to the Btu heat loss of the house.

We question your figures of 99,370 Btu at the bonnet and only 74,528 Btu at the register. This is far above the ordinary spread claimed by furnace manufacturers and ordinarily the two figures would be 99,000 and 90,000.

Assuming that the heat loss of the house is 70,000 Btu, if the system is a forced air furnace, the input to the burner should be 77,000 Btu per hour according to one method. If this is a gravity furnace, the Btu input to the burner should be 124,000 Btu per hour.

To figure the capacity required in a conversion gas burner, an accepted "short" rule is to take the total heat loss of the house in thousands of Btu per hour and multiply this by either factor A or factor B, as follows:

GAS DESIGNED FURNACE

	Factor A	Factor B
Forced Air	1.6	1.5
Gravity	1.7	1.6
CONVERSION BURNER		
Forced Air	1.7	1.6
Gravity	1.8	1.7

Factor A is used when the heat loss is less than 25,000 Btu per hour. Factor B is used when the heat loss is from 25,000 to 200,000 Btu per hour.

If you want to be real precise, you can interpolate between 25,000 and 200,000—but this is not necessary.

You will note from the above that this particular method can not be used for coal furnaces.

American Artisan

●

Soldering Chromium Plated Metal

American Artisan:

Will you please tell us what flux to use in soldering chromium plated metal?

K. S., Kansas.

Reply by
The Editors

American Nickeloid Company, a manufacturer of chromium plated sheets advises that there is no way of satisfactorily soldering chromium plated material, because the chromium plating is too hard to "take" solder. They suggest that you can solder the base metal if you will remove the chromium plating with muriatic acid. If possible, in assembly seams to be soldered should be placed on the back side of the work where the removal of the chromium plating will not show and will not matter. For soldering base metal under chromium plating, this manufacturer suggests a paste flux which does not spatter.

●

Return Grille Location

American Artisan:

Will you please advise us if any manufacturer is advocating locating return air grilles in the wall just above the baseboard? This is on forced warm air systems. If such an idea is advanced will you please explain the theory of such location. If such an idea is not advanced what do you think of the idea? We have been refusing work where this location is specified, but one contractor is using the idea with single speed, intermittent operating fans.

G. E. J., Wisconsin

Reply by
The Editors

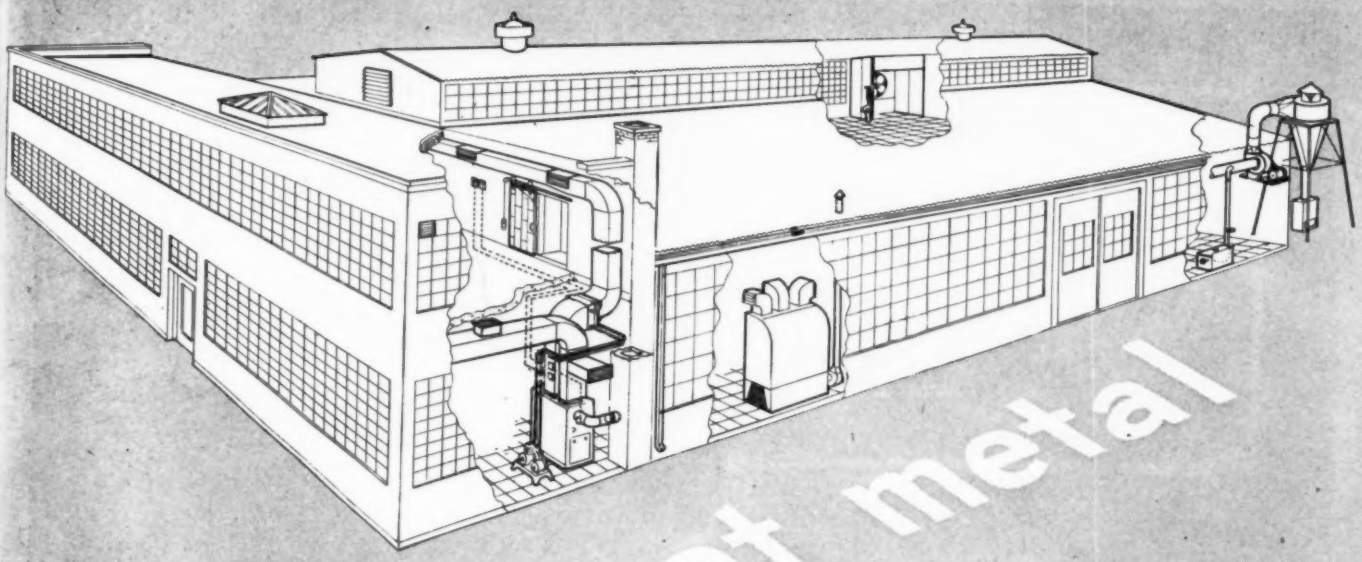
We have looked through all the manufacturers manuals we have on hand and find no specific recommendations as to whether return air grilles should or should not be just above the baseboard.

We quote from the findings of the University of Illinois, Research Residence:

"Tests in the Research Residence confirm preceding statements that the location of cold air return grilles do not appreciably affect the room air temperature conditions. The suction effort of a return grille is extemely localized and does not extend very far into the room. A general drift of cool air at a very low air velocity toward a return grille is observable, but such slow drifts are not sufficient to produce marked changes in the air temperature in the room. It is common practice and probably a desirable one, to install cold air grilles near outside wall and under windows. It should be realized that the most effective method of directing the air circulation in the room is by adjusting the air flow of the warm air registers.

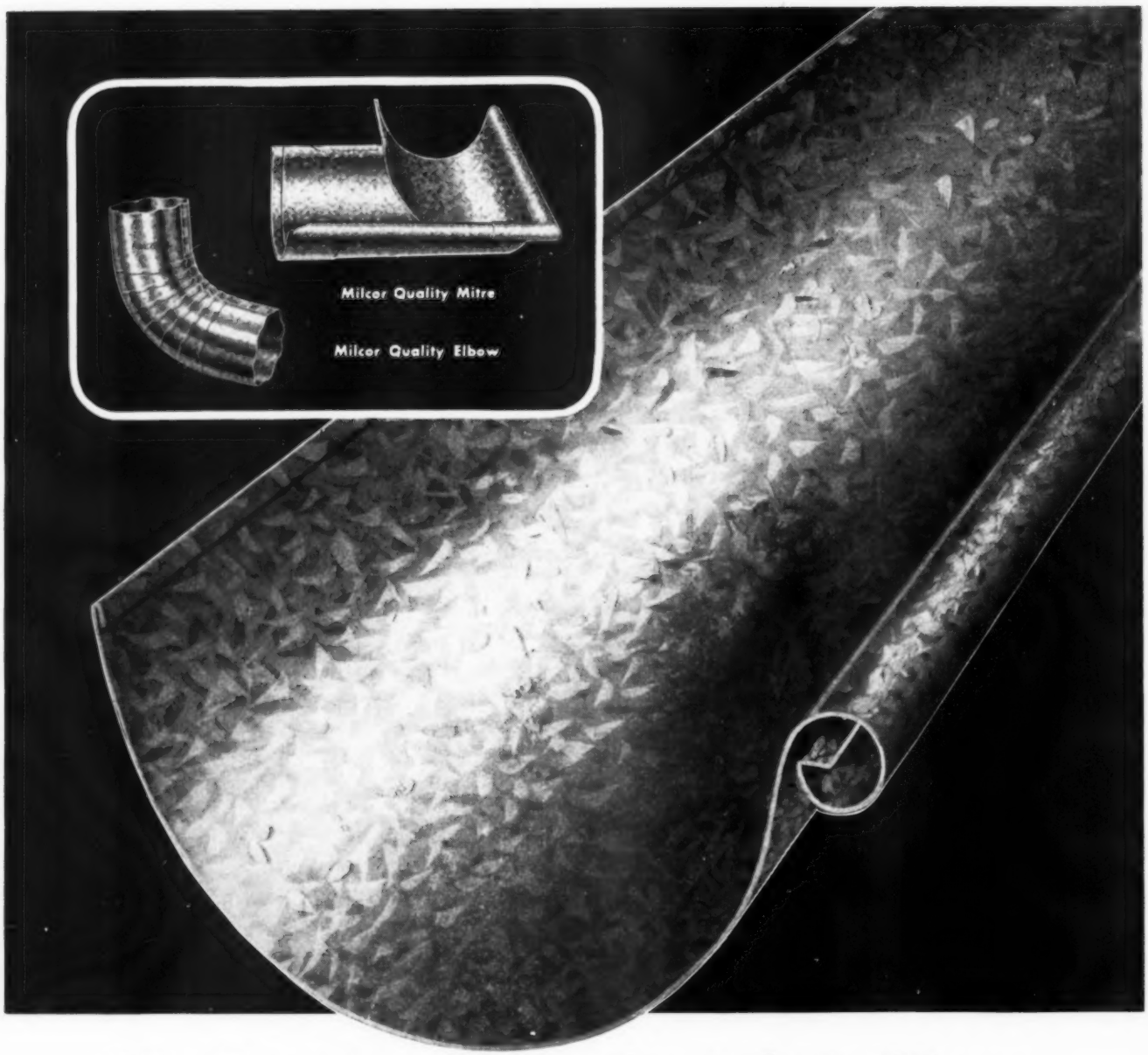
"In general, cold air grilles should be located at the baseboard, near the floor level, although construction conditions may require that grilles be placed two or three inches above the floor. Although floor grilles are effective and cheaper to install, they serve as dirt traps and hence are not desirable."

You will see from the above that whether the return is in the baseboard or just above seemingly does not make much difference.



sheet metal Section

DEVOTED TO SHEET METAL CONTRACTING AND FABRICATING



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Expansion and Contraction of Metals*

THERE is nothing new or mysterious about the expansion or contraction of metals. When an unrestrained body of metal at room temperature is heated uniformly, it expands, as shown in Fig. 1. All its dimensions increase—and the amount of this expansion is definitely known for each degree rise of temperature. When the overall temperature is lowered again to room temperature, a reverse action takes place. The body of metal contracts and, for all practical purposes, its dimensions decrease the same amount that they increase when the body is heated.

The forces of expansion and contraction are so great that they cannot be prevented. However, they can be controlled. It is possible to prevent expansion in one dimension (Fig. 2) or in two dimensions (Fig. 3), but not in all three dimensions at the same time. In this manner, one can direct the forces of expansion so that their effects will not prevent satisfactory work.

Expansion in Sheet Metal

In such operations as welding and cutting, heating and cooling are seldom, if ever, uniformly applied to all of the metal involved. In any one instance, there may well be, in a rather small area, metal that is being heated, metal that is molten, metal that is cooling, and metal that has not yet changed temperature at all. Because the base metal parts are not uniformly heated, a restraint is exerted by the colder metal while expansion takes place during heating. Likewise, during cooling the cold metal exerts a restraining force upon the contraction.

Let us see now (Fig. 4) what effect these restraints have on a piece of sheet metal that is freely supported at room temperature. If the shaded area along one edge is heated to a bright red, the heated part of the metal expands in the directions indicated by the arrows and increases in all three dimensions—that is, the edge grows longer and thicker, and the entire sheet grows wider. The amount of increase in width and thickness is not as great as in length because of the smaller dimensions of these two directions, but the increase in dimensions is proportional in all three directions.

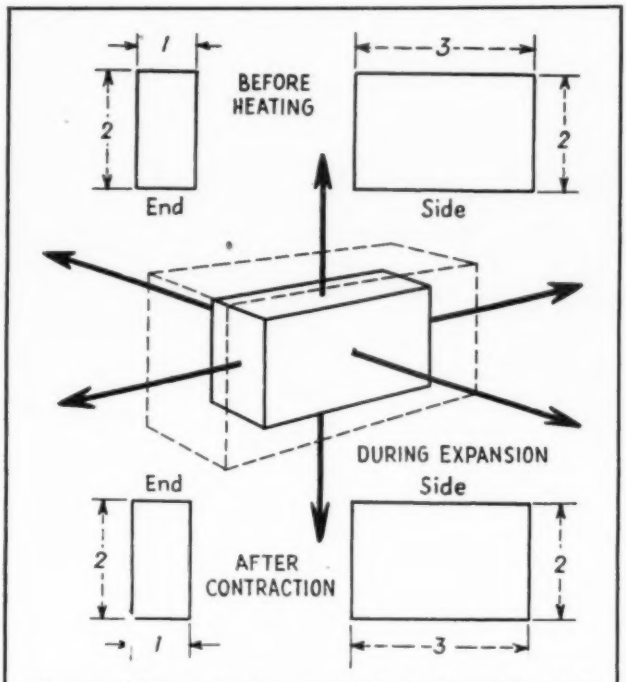

Fig. 1—When a freely supported steel bar is heated uniformly, it expands in all directions (as shown by arrows and dotted lines.) The length, width, and thickness of the bar increase as the temperature increases—the amount of increase in each direction being directly proportional to the corresponding dimension. In this bar, for example, the length expands three times as much as the thickness because the bar is three times as long as it is thick. As the bar is allowed to uniformly cool again, all three dimensions decrease in proportion until, at the original starting temperature, they are the same (solid lines) as before heat was applied to the bar.

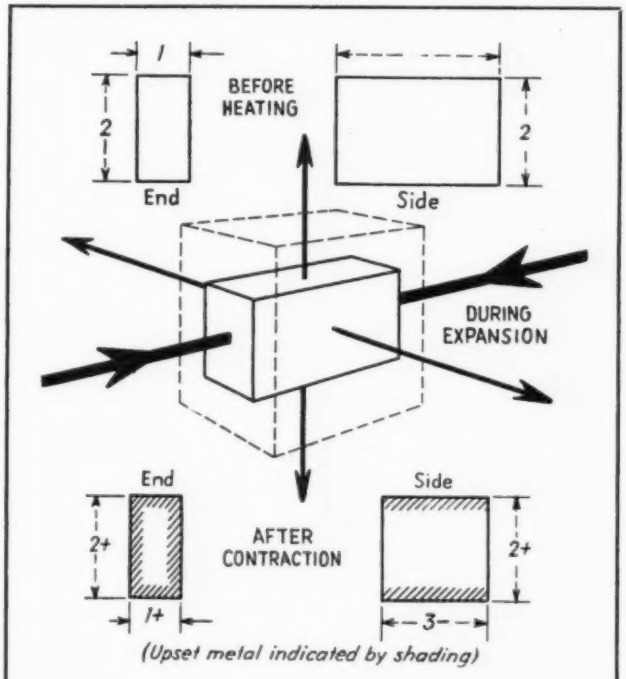

Fig. 2—If the steel bar is clamped or blocked at both ends (heavy arrows) so that it cannot increase in length and is then heated as before, only the width and thickness increase. But because lengthwise expansion is prevented, the increase in width and thickness (light arrows and dotted lines) is greater than in the free bar shown in Fig. 1. Expansion is controlled in one dimension at the expense of increased expansion in the other two dimensions. As this bar is permitted to cool again uniformly to its starting temperature, contraction causes all three dimensions to decrease. The fact that the bar is forcibly prevented from expanding lengthwise during heating does not eliminate subsequent contraction in this dimension. When this bar is cooled, its width and thickness are greater than originally, while its length is less.

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* *Reprinted from Linde Co's. "Oxyacetylene Tips"*

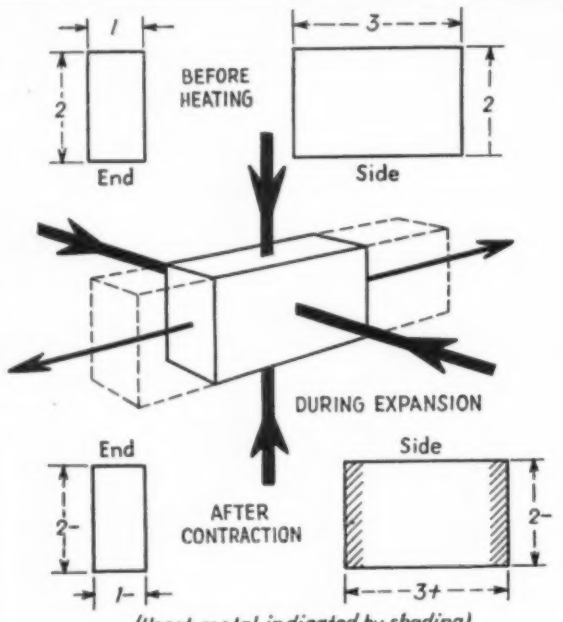


Fig. 3—Suppose that this steel bar, identical to those shown in Figs. 1 and 2, is clamped or otherwise forcibly restrained from expanding in two dimensions (heavy arrows). When heat is applied, expansion of the bar (light arrows and dotted lines) is all lengthwise and the increase in this dimension is much greater than in the free bar shown in Fig. 1. Expansion is controlled in two dimensions at the expense of increased expansion in the third dimension. As the bar is allowed to cool again, the forces of contraction set in and cause all three dimensions to decrease. When the bar regains its starting temperature, it is greater in length than it was before heating, while its width and thickness are less.

In heating the shaded portion, the edge of the sheet reaches the highest temperature. From this edge, back into the body of the sheet, the temperature of the heated area gradually decreases until at a certain point the metal is entirely unaffected by the heating. From this point back to the far edge of the sheet, all of the metal remains at room temperature. Since the temperature of the metal directly affects the amount of the expansion, it therefore follows that the edge of the sheet, which is the hottest portion, expands the most and the remainder of the heated metal expands to lesser degree in direct proportion to its temperature. Figure 5 illustrates this by use of greatly exaggerated strips, each of which represents a difference of temperature within the metal sheet.

Because both the heated and unheated portion are of one piece, expansion of the heated metal is restrained by the unheated metal in the sheet. This causes some upsetting, and the combination of restraint and temperature variations in the heated area causes the sheet to warp so that at full expansion, it assumes the shape shown in exaggerated form in Fig. 6. As the metal is allowed to cool, the restraining forces and temperature variations again affect its contraction. When all of the metal returns to room temperature, the edge that was heated is slightly shorter than before. The result is that the metal may still be somewhat wavy, especially along the edge that was heated.

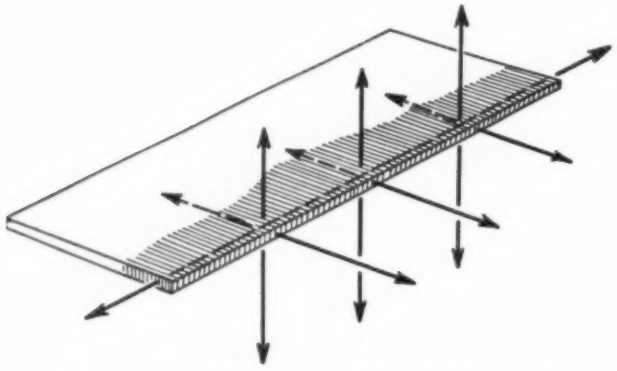


Fig. 4—When the edge of a piece of sheet metal is heated, forces of expansion (arrows) cause the edge to grow longer and thicker and the entire sheet to grow wider. (Heated area is indicated by shading.)

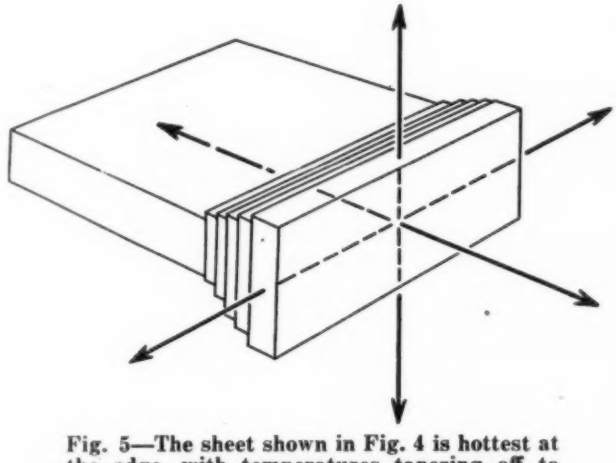


Fig. 5—The sheet shown in Fig. 4 is hottest at the edge, with temperatures tapering off to room temperature in the unheated metal. This greatly exaggerated sketch shows how the amount of expansion varies directly with the temperature of the metal.

One method that can be employed to control distortion during welding is shown in Figure 7. If the metal sheet is first inserted in a rigid block and the edge that protrudes is then heated, the mass of metal surrounding the sheet restrains the expansion in certain directions and causes the expansion forces to relieve themselves by upsetting the metal outside of the block. The application of restraining forces, by use of this simple jig, prevents waviness in the sheet. This is made possible by the rigidity of the jig or block, even though the sheet by itself is not strong enough to resist the distortion.

Upsetting

To illustrate what is meant by upsetting, Fig. 8A represents a piece of sheet metal cut nearly in two by a slit. If the shaded areas are heated to a bright red and then allowed to cool, the edges of the sheet at the open end of the slit are drawn together. Depending upon the width of the slit and the amount of heating, these edges may be drawn together so much that they actually overlap, as shown in Fig. 8B.

As heat is applied to each successive spot, the heated metal tries to expand in all directions. The cold metal surrounding this spot acts as a vise, however, and causes all of the expansion to take place in the directions in which there is no

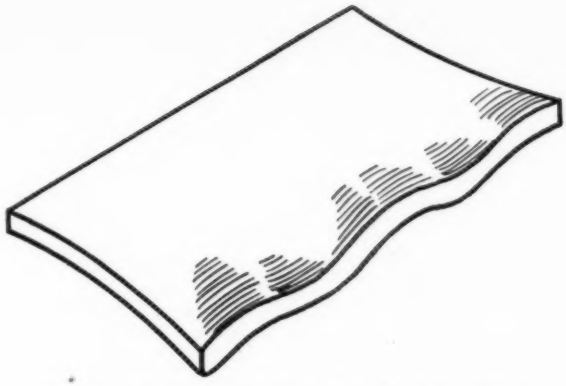


Fig. 6—At full expansion, the sheet in Fig. 4 assumes a shape like this. Distortion results from uneven temperatures in the heated area and restraining forces in the cold metal. After cooling, the heated edge is slightly shorter than it was formerly and the sheet may still be wavy.

restraint. As expansion continues the metal becomes softer with the increase in temperature. The forces of expansion are then relieved by piling up the hot metal. This is easier than pushing away the surrounding cold metal, which would result in distortion of the entire part. As this takes place there is a slight thickening of the heated area, and that portion of the edge of the slit that lies within the heated area may bulge slightly outward.

As the metal cools again, contraction forces increase within the area that was heated. In order to pull the sheet back to its original size and shape during cooling, the forces of contraction would have to unpile the metal that was piled up during heating. However, this metal becomes increasingly harder and more rigid as the temperature drops, so that it becomes easier for the contraction forces to pull the whole piece of metal out of shape than it is to thin out the thickened section. The outer ends of the slit are drawn together because the inner ends are fastened and act as a hinge. If both ends of the slit were fastened, then the edges could only move up and down, and the sheet would become wavy.

When metal parts are unevenly heated, there is always some upsetting caused by restraint of expansion in one direction at the expense of increased expansion in the other two

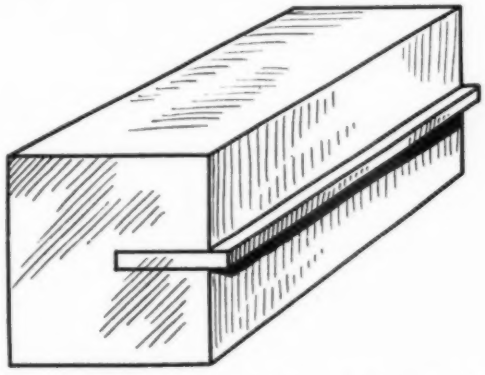


Fig. 7—If a piece of sheet metal is inserted in a metal block, as shown here, rigidity of the block prevents distortion in the sheet when the protruding edge is heated. This is one of the principles of jigging sheet metal parts for welding.

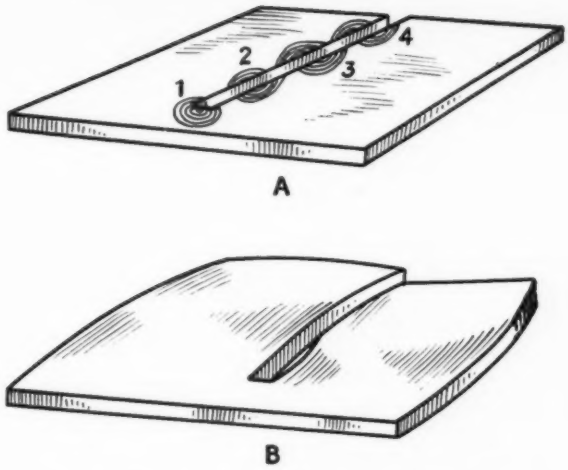


Fig. 8—Progressive heating and cooling (in the order shown in A) draws together the edges of the open end of the slit in a metal sheet like this. The cooled sheet may be so distorted that these edges overlap as shown in B.

directions or by restraint in two directions at the expense of increased expansion in the third direction.

Straightening Operations

Expansion and contraction frequently must be counteracted in some manner during welding. However, these same forces may also be employed to the advantage of the operator in straightening warped or distorted parts. Upsetting is the principle upon which the use of expansion and contraction for straightening depends. The same upsetting effect that caused distortion of the sheet metal during the experiment illustrated in Fig. 8 can be used to straighten the beam shown in Fig. 9. Suppose that this section of a T-beam has been hit hard enough at point P to bend the beam as shown. By using the oxy-acetylene flame alone, the operator can apply enough heat locally to reverse the process that caused the distortion and thus straighten the beam.

When the beam was hit at P, the forces that were set up by the blow permanently stretched the metal at A, so that the beam became deformed. When that stretch occurred, the metal at A was thinned out somewhat. If the shaded area at A is now heated, this heating first tends to bend the beam even farther. As the temperature increases, however, the

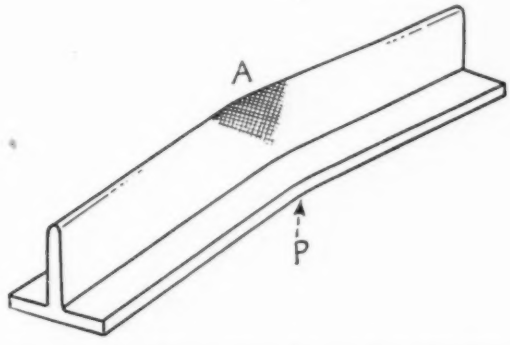


Fig. 9—Upsetting, expansion, and contraction can be used to advantage for straightening distorted parts by heating and cooling.

metal in this heated area becomes softer and the forces of expansion are relieved by upsetting the hot metal.

When the flame is removed and the metal is allowed to cool, the forces of contraction are relieved by pulling the beam back into line. If a considerable amount of realignment is to be accomplished, heating may have to be repeated to obtain full correction. This is done, however, by heating successive triangular-shaped areas adjacent to each other—not by reheating the same area.

If the original distortion is overcorrected the beam can be heated at P to reverse the pull. Similarly, any twist can be corrected by heating off the center line in the opposite direction.

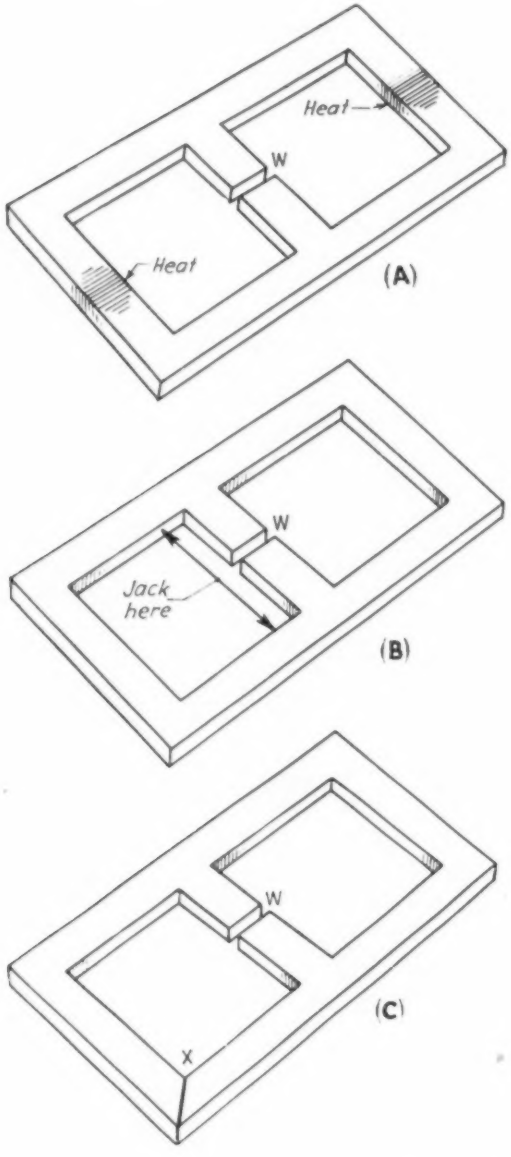


Fig. 10—Three methods for successfully welding this shape at W: (A) Preheat and hold shaded areas at a bright red until welding is completed. (B) Jack frame apart, as shown by double arrow. Slack off jack as soon as weld is finished. (C) Cut frame at point X. Weld at W. Then weld at X.

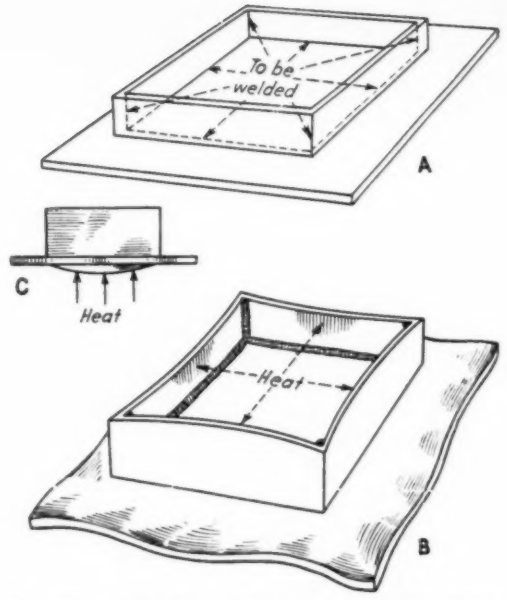


Fig. 11—In the type of basic design shown here, careful selection of welding sequence minimizes distortion. Expansion and contraction forces can also be used to advantage as a corrective measure.

Restrained Parts

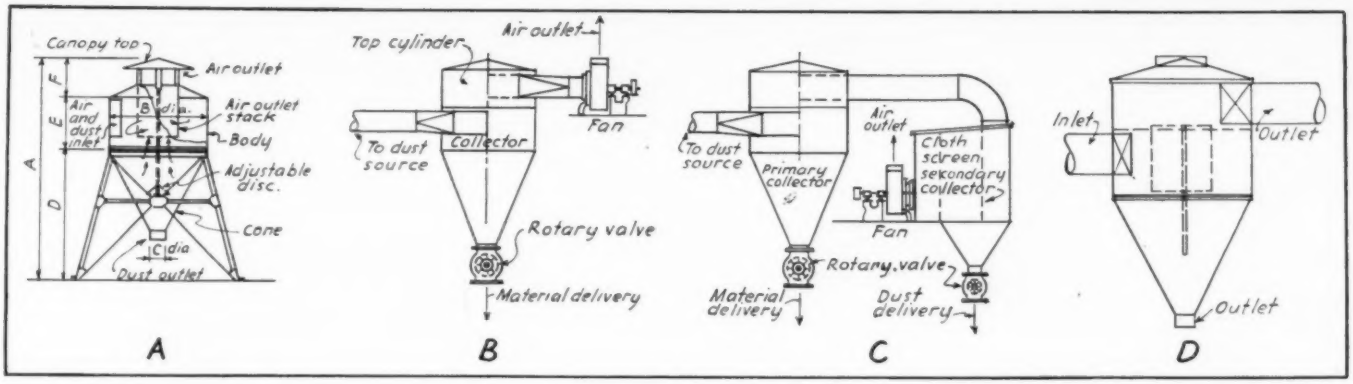
Allowances for expansion and contraction in parts which are more or less restricted during welding depend on judgment and experience of the welding operator. However, although there is a vast number of different designs for such parts, most of them can be reduced to the two basic forms shown in Figs. 10 and 11. If the operator understands how expansion and contraction affect these two shapes, he can more easily estimate how these forces affect a more complex part of similar basic design.

A second basic form in which restriction plays an important part during welding is shown in Fig. 11. After welds have been made at the points indicated in A, the part assumes a distorted shape something like that shown in B. If the inside of the frame and the base plate are heated, as shown in B and C, the resulting upsetting action as the metal becomes hot and the following contraction as it cools frequently draws the part back into fairly close alignment. In straightening the base plate, heat a series of closely spaced spots starting at the bottom of the buckle and proceeding to the high spot.

Additional Factors

In order to simplify this discussion as much as possible, a number of factors have been avoided. No attention has been devoted to the possibility that some materials may not be able to withstand the bending or buckling caused by uneven heating or cooling. Of course, the amount of distortion shown in the sketches is greatly exaggerated for purposes of illustration, but the fact remains that some distortion always results whenever metals are heated or cooled unevenly. Certain materials, such as cast iron, cannot be bent by any means into the shapes shown. These metals would break long before such shapes were reached. On the other hand, sheet steel might be permanently deformed even in that exaggerated manner without breaking. Therefore, if the forces created by uneven heating and cooling are allowed to

(Continued on Page 148)



Pull-Through Dust Collector

A SUBSCRIBER recently asked how to dimension and baffle a collector of the "pull-through" type—meaning that the collector is placed *between* the source of dust and the fan. A search through catalogs and manuals disclosed only sketchy information, so an inquiry was sent asking for data.

From H. N. Middleton, of the B. F. Sturtevant Company, came a blue print, a catalog and a letter describing the basic principles of this system. Mr. Middleton says: "The use of the cyclone dust collector located between the fan and the machine is termed a 'draw-through' arrangement. A cyclone properly proportioned for a 'blow-through' system, as ordinarily used, does not need any extra baffles when used on a 'draw-through' system. The material outlet, which is at the bottom of the cone, however, must be so arranged that no air can enter through it. A rotary valve makes the best seal here.

"If the volume of the material is small, the material may be delivered to an air tight storage chamber below the cone large enough to hold 125 per cent of a day's collection of material. This chamber must be emptied when the fan is *not* in operation. When a rotary valve is used, the valve must continue to operate approximately one-half minute after the fan stops to allow the valve to clear itself.

"On a 'draw-through' system, the writer has always used a standard 'blow-through' cyclone with an extended cylinder at the top (see sketch B and D); this forms an extra chamber for the air outlet. However, a standard 'blow-through' collector may be used by connecting the air outlet with long radius elbows to the fan.

"Attached are three sketches from the Sturtevant booklet, 'What We Make,' and one special drawing for a 'draw-through' collector. Sketch (A) shows the proportions for the standard 'blow-through' collector. The dimension letters refer to Table A below

"Sketch (B) shows the general construction for a 'draw-through' collector with the extended chamber or body and the air-tight top. Sketch (C) shows the arrangement for very light dust—the 'draw-through' collector is followed by a cloth screen arrestor, electric precipitator, air washer scrubber or other comparable device. Note that in this arrangement both collectors are between the source of dust and the fan, so that the whole system is 'draw-through'

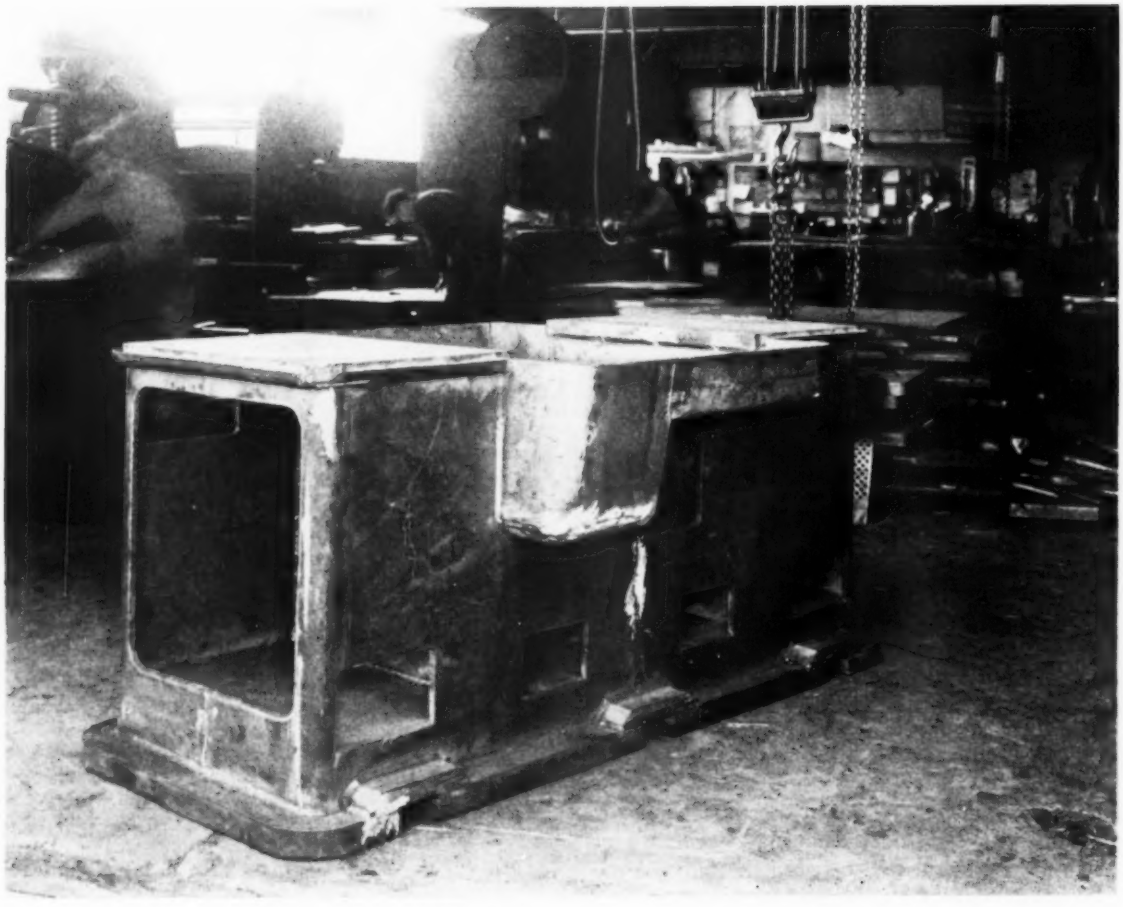
"Sketch (D) shows the internal arrangement of a 'draw-through' collector. It is made like a 'blow-through' collector except that the cylinder or body is extended to form the upper chamber and the inside tube stops below the extended cylinder or air outlet. The air outlet on the upper cylinder may be placed at any tangential point on the circumference."

TABLE A—OVERALL DIMENSIONS DESIGN 1 DUST COLLECTORS

Size Inlets	A	B	C	D	E	F	Wt. Coll. only
2" x7"	6' 10⅝"	2' 0"	2"	5' 2"	12"	8⅝"	45#
3" x10"	7' 10⅝"	2' 6"	4"	5' 8"	15"	11⅜"	65#
4½"x13"	9' 11⅜"	3' 6"	6"	7' 0"	21"	14⅜"	135#
6" x15"	11' 6¼"	4' 2"	10"	7' 8"	2' 4"	18¼"	200#
7½"x17"	11' 11½"	4' 8"	10"	7' 10"	2' 4"	21½"	250#
8½"x19"	12' 8½"	5' 4"	10"	8' 0"	2' 8"	2' 0½"	375#
9" x24"	13' 9¼"	6'	12"	8' 6"	2' 11"	2' 4¼"	450#
9" x30"	15' 1¾"	6' 8"	12"	9' 2"	3' 4"	2' 7½"	625#
10" x33"	16' 5"	7' 4"	12"	9' 10"	3' 8"	2' 11"	725#
12" x39"	18' 7¾"	8' 8"	14"	11' 1¼"	4' 2"	3' 3¾"	1200#
16" x45	21' 2"	10' 0"	16"	12' 4"	4' 10"	4' 0"	2050#
19" x54"	24' 11½"	12' 0"	16"	14' 4"	5' 10"	4' 9½"	3000#
22" x60"	28' 9½"	13' 4"	18"	15' 7"	7' 9"	5' 5"	4425#
27" x65½"	29' 3"	13' 8"	18"	15' 10½"	7' 9"	5' 7"	4700#
32" x71"	29' 9"	14' 0"	18"	16' 2½"	7' 9"	5' 9"	4900#

VELOCITY AND PRESSURE FOR CONVEYING MATERIALS

Approx. duct velocity 70° air Feet per min.	Velocity pressure in duct inches water gauge	Class of work or materials handled
2000 to 2500	0.39	Gas, Fumes and very light materials.
3000	0.58	Cotton, wool and similar materials
3500	0.76	Shoe machinery, saw dust, light polishing and buffing wheels
4000	1.00	Ordinary wood working exhaust systems, heavy polishing, buffing and grinding
5000	1.55	Heavy duty wood working or wet materials.
6000	2.25	Sand, grain, coal, lead dust, pulp chips etc



Typical welded plate machine base—the heavy base is flame cut; the pieces forming the upper cabinet section are either flame cut, nibbled or sheared depending on the thickness of the metal and the contour of the opening. Pieces are finally assembled by welding.

Machine Bases of Welded Plate

IN the September, 1942 issue of AA, the description of Industrial Metal Fabricators (Detroit) development of production line fabrication of machine tool working parts housings briefly mentioned the firm's parallel development of machine bases formed and welded of heavy plate to replace previously used iron castings.

In the four years since that article appeared, Industrial Metal Fabricators has studied and improved its design and construction of these fabricated bases until, today, this activity constitutes a large part of the firm's day-to-day operations.

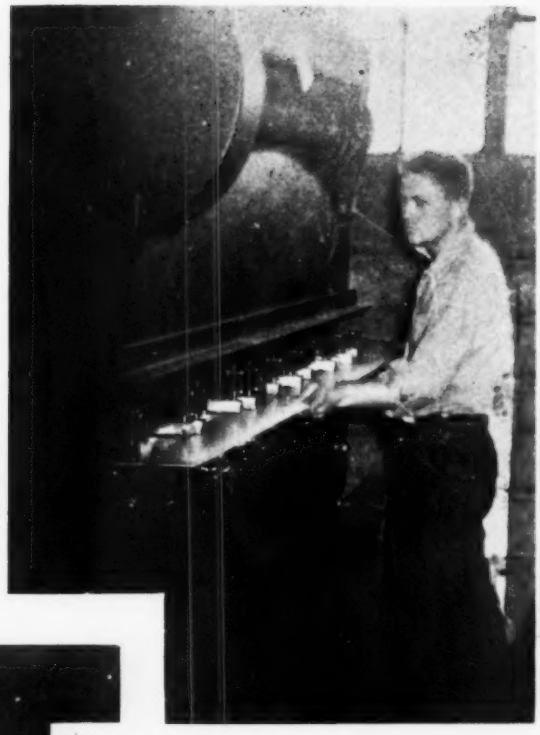
Several things, of course, have contributed to the machine tool industry's acceptance of the welded steel plate base—(1) a distinct saving in cost is obtained; (2) a substantial saving in weight is assured; (3) foundry production of large and heavy castings continues to be a serious problem; (4) firms, like Industrial, have improved their technique so that any pattern may be duplicated readily.

The photographs show steps in the production of a few of the many types of bases Industrial now supplies. Production begins in the engineering department where blue prints are translated into parts and dimensions which may be readily cut, formed and welded to duplicate closely the machine tool manufacturer's ideas and requirements.

In the battery of heavy press brakes and shears, plate pieces are cut, punched, notched and formed with openings made in the flat as the photographs show. Frequently, parts are large and heavy, so Industrial follows the practice of using several men in a crew and, where possible, places more than one set of dies on a single large press brake so that more than one formation can be made without moving the part around the shop.

Other equipment, like nibblers, punch presses, rotary shears are available for making irregular openings, round openings, etc. This equipment is also supplemented by flame cutting machines and hand torches for extra heavy plate or cuts which cannot be made within the throat openings, etc. of machines.

With pieces cut and formed, the next step is assembly. Here pieces are welded into sub-assemblies and sub-assemblies are welded into complete bases. Usually, the pieces and sub-assemblies are so stiff and heavy that welding fixtures are not required. And, further, the sub-assemblies and complete bases are too large for the ordinary movable fixtures so welding procedure is worked out in such a manner that once assembly



Upper, left—Where the machine base is not too large, final assembly is made on a low truck which can be moved about the shop as required. The base stays on its truck until it is loaded for delivery. Upper, right—Industrial does much multiple punching using the self stripping punches. Center—Some sub-assemblies must be finished to close tolerances; numerous types of clamping and aligning fixtures are used to position such work during welding. Lower, left—An intricate machine base which Industrial built up from blue prints. Base has been tack welded. Lower, right—Another type of base with heavy top as well as base. Openings were flame cut.

Industrial workmen are expert with the cutting torch—this mechanic is making an angle out of a channel, cutting freehand.

begins it is seldom necessary to turn the assembly to get at the weld.

Bases Must Be Moved

Industrial has found, however, that even the best production line cannot eliminate all need for moving the bases from place to place so, on most bases welding begins and is completed with the pieces and sub-assemblies put together on swivel wheeled trucks which can be moved from place to place. Once welding begins the base usually stays on its truck until it is ready to be loaded for delivery.

Should it be necessary to turn a base, heavy chain hoists and cranes are available throughout the shop to pick up the base.

Welding is usually by electric arc. Pieces are tacked in position and together and then the full weld is laid after alignment is checked. Following final welding, welds are ground down with hand electric grinding wheels to obtain the smooth joints required for painting—usually done by the machine tool manufacturer.

In its well laid out building and with the wide assortment of power equipment, Industrial believes machine bases will prove to be a wisely chosen item for production line fabrication.

Short Items of Interest

Health and Welfare Insurance

In recent weeks certain of the mass production industry unions have put more emphasis on health and welfare insurance than on increased wage rates per hour. The United Automobile Workers, for example, has recently released a blueprint of its comprehensive social security program which UAW says will be demanded of all employers in 1947 negotiations. Here are some of the interesting features of this extraordinary program.

(1) Payment by employers of three per cent of their total hourly rate pay roll into a social security fund to be administered solely by UAW.
(2) Disability benefits totaling not less than fifty percent of average earnings, up to a maximum of 52 weeks.
(3) Substantial lump sum payments for dismemberment, loss of sight, or other total or permanent disabilities.
(4) The best obtainable hospital, medical, surgical and maternity services.
(5) Payment of all medical and hospital expenses.

UAW also announces that it will shortly release a demand for employer-financed, union administered, death and retirement benefits.

●

Fractional Horsepower Motor Production Increases

Office of Temporary Controls announces that in the month of November production of fractional horsepower motors suitable for household appliances and home heating units, increased by 182,000 units to attain a new postwar monthly peak of 1,157,000 motors. Further, total output of all types of fractional horsepower motors reached 2,261,741 in November.

CPA also announced that priority users of the type of motors used for warm air furnaces will require 90 to 95 per cent of the anticipated production of this group during the first quarter of 1947.

As of the end of November, the unfilled orders for fractional horsepower motors in the hands of producers totalled almost 40,000,000 motors or a backlog of some 17 months production at the rate obtained in November.

●

NHA Emphasizes Rental Housing

In order to produce more rental housing for veterans, meetings and conferences in almost 100 major cities were held during the latter part of January by arrangement of state and district offices of FHA and organizations in the building construction industry.

The announced purpose of these meetings is to investigate all factors which will stimulate the construction of residential housing—such as financial aid by government and private lending agencies; proper site selection and development; provision for utilities; and any necessary changes in regulations and procedures of FHA which will stimulate rental construction.

●

Commercial Air Conditioning

If plans now in progress materialize, some authorities in the commercial air conditioning are forecasting a 100 million dollar annual volume for the air conditioning of commercial and industrial establishments. Included are projects in hotels, restaurants, banks, hospitals, theatres, schools, department stores, etc.

Getting the Most Out of Your Press Brake

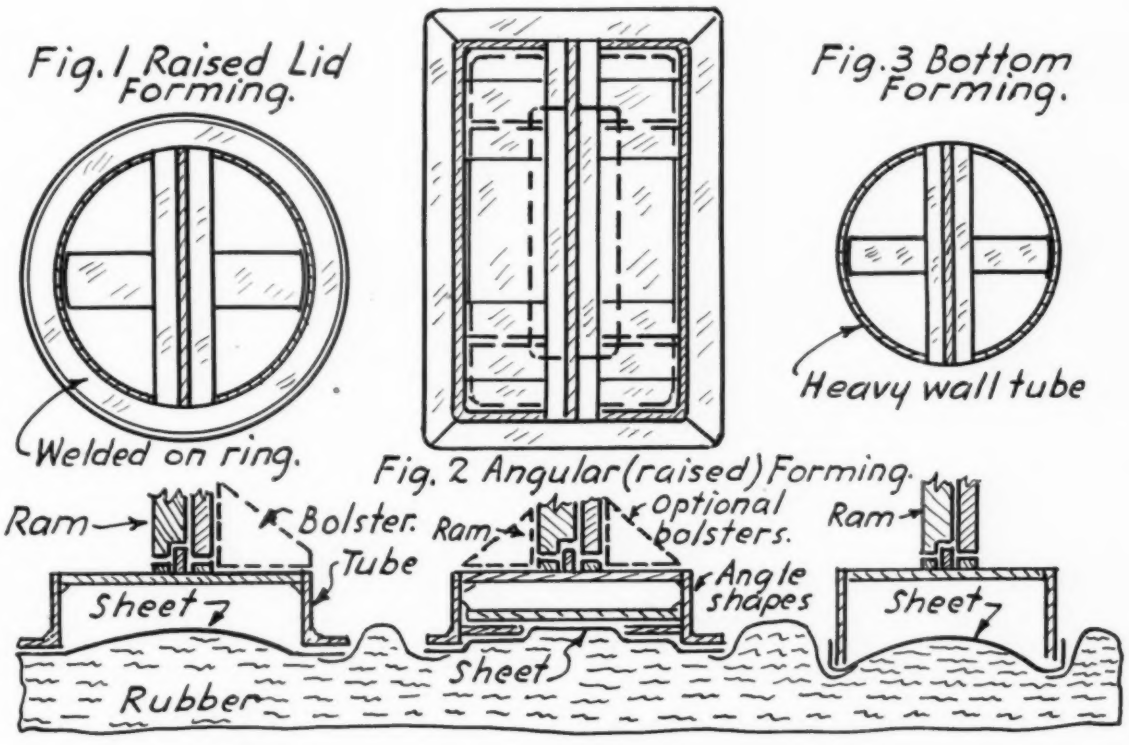
1001 Standard and Special Bending, Forming, Flanging, Punching Operations Your Press Brake Can Perform

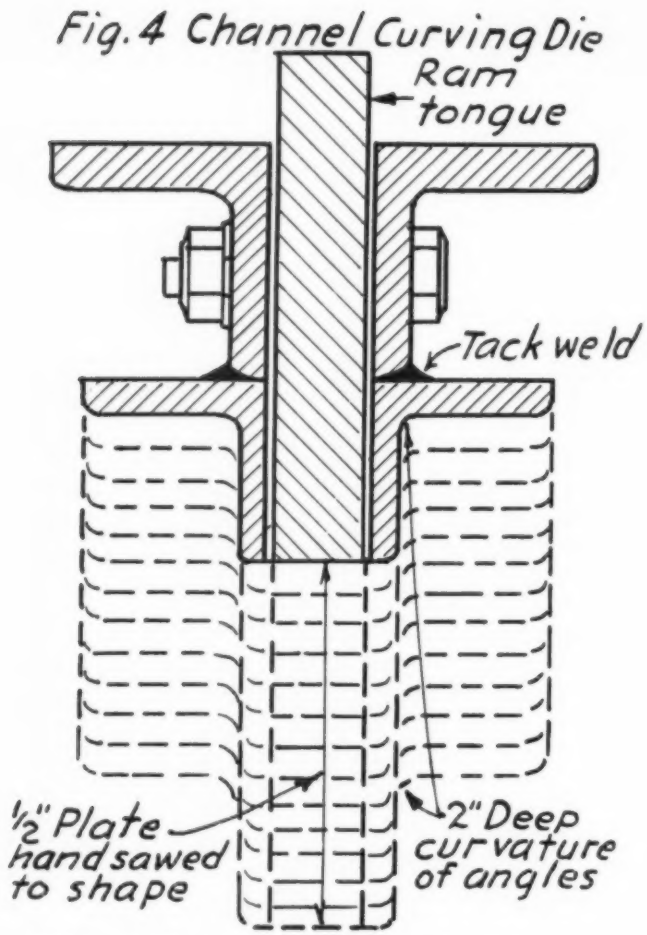
By Ernest E. Zideck
Sheet Metal Consulting Engineer

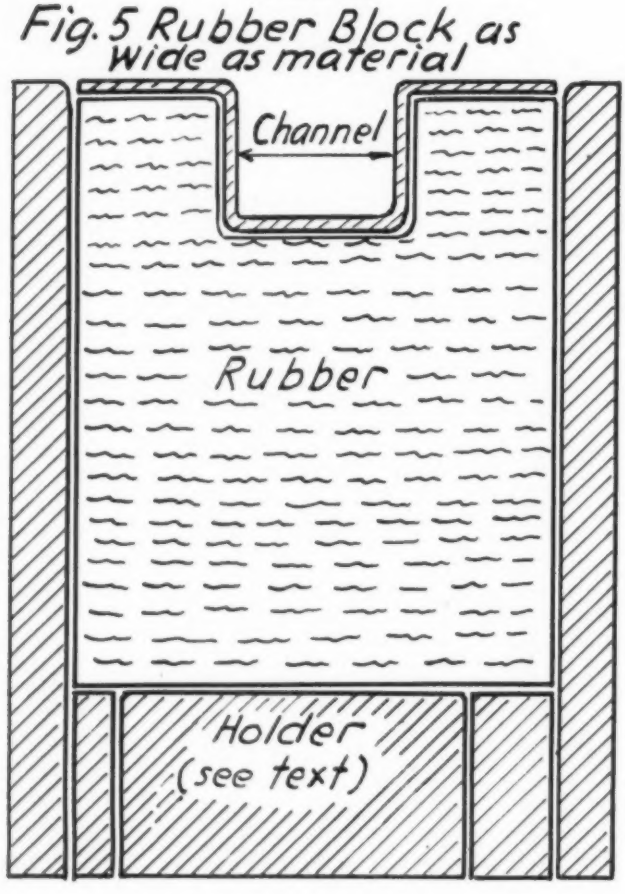
STAMPING AND FLANGING

THE PRESS BRAKE was designed, primarily, for "braking" the metal, or "shaping" it, on straight lines. Progressively, however, the machine has been put to other uses, such as notching the sheet, embossing it, and punching holes in it. Limited use was made for stamping. The Brake, in its standard makes, is so designed that the pressure exercised centers on a comparatively narrow, longitudinal area, and if we want to utilize the machine for work extending laterally from that area, we must build and mount heavy supporting and bolstering means, which take too much time to dismount, if and when the brake is needed for other work. Again, in stamping, we must count with the capacity of the brake, and inasmuch as any large or deep stamping requires much more pressure than does the shaping of the metal on straight lines, many brakes are unsuitable for the work. True, any press brake will do minor stamping that can be centered in an area only a few inches sideways from the center of the striking die mounted in the ram, and the forming of shallow upturns and embossments in discs not over 6" in diameter, in mild steel not exceeding the 20 gauge, is being done even in the lighter brakes. A regular press is much to be preferred for any kind of radial or curved press work, unless we want to mount a series of die-sets (as is possible in the brake) and do a mass-production of the above said discs, or similar small items.

Regular stamping consists of wrapping of sheet metal tight against the male die, and inasmuch as the die is round, or curved, or at least in its portions assuming rounded contours, the stamping process is largely metal compression, sometimes







drawing out of the metal, and mostly both. In a preceding installment of this text we have shown that metal compression calls for pressures which tax the capacity of the common brake. These pressures increase many fold, if the compression is on curved instead of straight lines, and increase proportionately with the radius of the curve becoming smaller. There is considerably less pressure requirement in the drawing out of the metal, but again the pressure will change in proportion to the contour to which the metal is drawn. There is a great difference, nevertheless, in metal compression, and metal expansion. The latter will be easier once the drawing out has commenced; while the former, compression, will become increasingly more difficult, the start being made at much less pressure than is required at the finish of the compression. Compression hardens the metal; its drawing out makes it thinner, and more pliable.

Types of Work

In the accompanying illustrations of a can bottom forming (Fig. 3), a raised lid formation (Fig. 1), and a panel being formed into an ornamental (and reinforced) status, (Fig. 2), is shown a process whereby "imitation" stamping is being done, in a press brake, with practical elimination of metal compression. The forming of the metal into the indicated shapes is accomplished entirely by drawing out the metal as in Fig. 1; by a certain amount of compression in the "flange," as in Fig. 3, and by a minimum of the metal being subjected to compression in the "rounded" corners of the panel, as in Fig. 2.

It will be observed in the drawings, that the "male" die is absent in this process, and that the "female" dies are, in two cases, pieces of heavy-wall tubing, one provided with a welded-on ring, and in the third case, that of the panel forming, the die is constructed of "angles" and of welded-in steel plates. Only the perimeter of the narrow plates that form the final step in the contour of the panel, is "rounded" or, finished. Nothing is done along these plates in the area of the first step-forming, except that in the corners, welding was applied heavier, and the weld finished smoothly in a radial way. Some corner-forming was applied to the area in which the second step radials occur. Contrary to the procedure inherent in "stamping," where the sheet is "bent down" over the male die, we see in the Fig. 1, 2, and 3, the metal pressed down into rubber, by the ground-off end of the tube (Fig. 3), and by outward pointing angle-parts of the dies (Fig. 1, 2). With the edge-portion of the disc or panel "pinned down" in the rubber, only the interior area of the disc or panel can move, and that "upward" only, in which direction it is moved by the "swelling-up" rubber congesting between the walls of the form. It is apparent that the flanges of the disc in Fig. 1, and of the panel in Fig. 2, held down to the rubber by a greater pressure than is exercised against the interior portions of the disc or pan, will not be subject to "wrinkling," but that they will remain smooth to the end. The upward moving rubber carries the sheet metal with it; in Fig. 3, bending the flanges over the metal of the form, and expanding it, upward, into the interior of the form; and in Fig. 1 and 2, just expanding the metal into the forms. There is not much "drawing-in" of the metal in Fig. 3, owing to the bending of the flange in opposite direction. Flanges in Fig. 1, and 2 are drawn in, to a small degree, and this degree is calculated in each given case of a formation, the size of the disc or panel, and thickness of the metal worked, coming into consideration.

How Rubber Is Used

The rubber block, about 4 inches in thickness, is shown in

one piece, but for purposes of easier handling, individual sizes may be procured and used. The casing (holder), if the rubber is to cover an area more than 12 inches in width, must have a steel base of not less than ¾" in thickness, and the sides to the casing can be ½" plates, extending 5" above the base plate. The base plate may be provided with angles, reaching over the die-holding bed of the brake, and be held in position by these means. The dies (forms) as may be constructed or obtained for the purposes, are shown suspended from the ram, as a male die would be. Where the brake has provisions for a die-hook in the die holding plate, it should be used. From contemplation of the drawings and the above text, it will be apparent, that this process of forming "raised" sheet metal products, be they round, oval or angular, is one that can be adapted to the common press brake. Pressure-requirements are low, because there is no metal compression of any considerable degree, the process consisting rather wholly, of "drawing out" the metal.

In Fig. 4 is shown an arrangement for making "curved" channels, bending tubes to a slight radial, and doing other work of the kind, uniformly and rapidly. The channel shown in the drawing can be obtained ready-made, or it can be formed locally. If the curve called for in the channel (tube, or similar), is not too pronounced, the means shown will make it possible for the work to be done in the press brake. The rubber holder can be of the "adjustable" type, to hold the right widths of the material, or it can be a much wider holder, with "plates" for inserts, to narrow down the space for a width of the rubber strip as may be needed for a particular job. Shallow channels of mild steel and other metals can be formed in rubber (as previously treated in this series), but it is better to make the channel first, straight, and then put the curve in it.

Another likely use for the rubber block is pictured in Fig. 6. Without special dies, it is very difficult to do forming in the press brake, of shapes similar to the one in Fig. 6. In such cases we can construct a means, using ½" thick plate, with angles bolted to it as shown, for a continuous use, changing only the strips (angles), which make up the thickness required to fit into the deep channel or other such part, shown in Fig. 7. The strips need only to be tack-welded or tack-brazed to the principal means, as shown. By inserting the disfigured piece of work over the means, the ram descent will bury the part in the rubber, the elasticity of the material making the burying possible, at the same time exercising pressure that will cause the sheet metal to assume the shape of the punch (die).

In Figs. 8 to 12 we are illustrating certain essentials of imitation stamping by substitution of rubber for the male die. As previously stated, soft sheet metal can be formed, in the press brake, to round, curved or partly straight and partly rounded, "raised" positions, such as raised discs, can bottoms, raised panels and the like, and as pictured in Fig. 8. The section gives the contour of the formed metal both ways: longitudinally, and across. The "meeting place" of the elevations, if the part is angular, can be either a small radial, or a ridge. But if the latter, the corners in the form must be made accordingly, just as the corners desired to be radial, must be filled in with weld or other means, and finished to the required shape. In Fig. 8 the part is shown facing "down," and would be formed in that position if the rubber would operate in the ram, with the "form" beneath it. As this arrangement is difficult, if not impractical, we show the subsequent figures as representing the form mounted in the ram, with the rubber block below.

Fig. 6 Re-Forming Parts

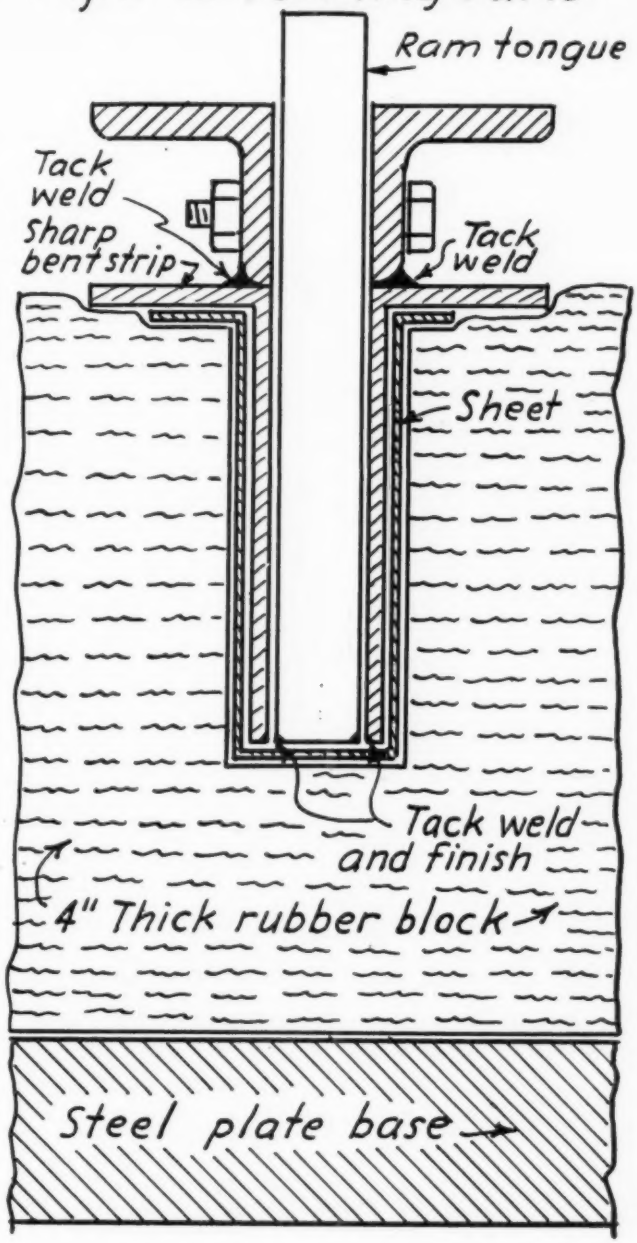
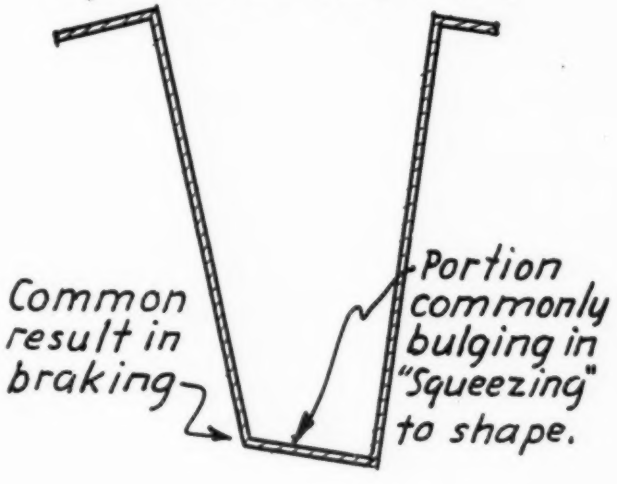
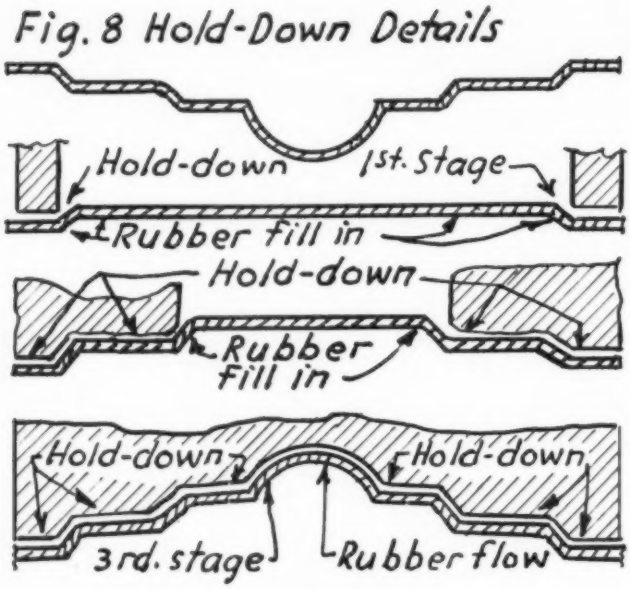
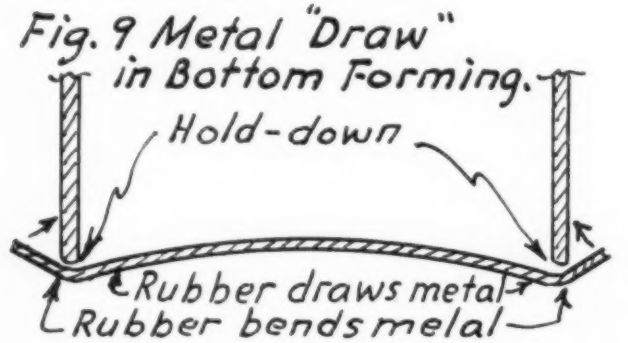
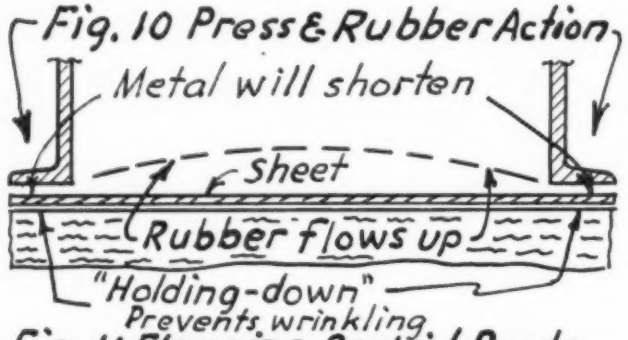


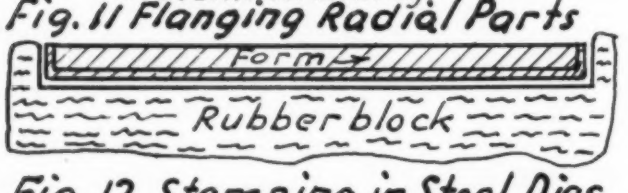
Fig. 7 Deformed Part

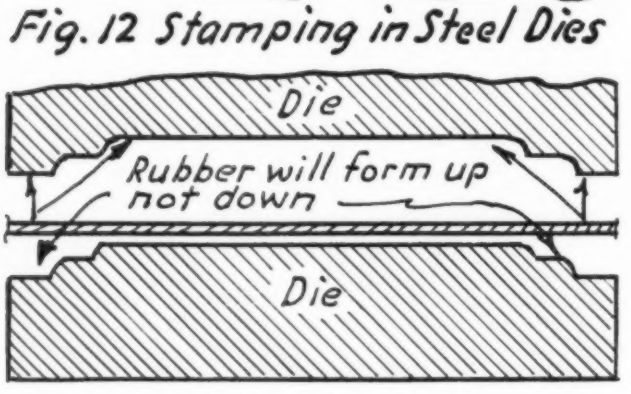












It is to be noted, in the three drawings immediately below the formed part, Fig. 8, that the first essential in this process is the "holddown" of the sheet metal, at the point where the initial stage in the forming process takes place. This point is at the perimeter of the disc, or panel, but enough distant from it to provide metal for eventual "draw" to the middle, and leave the desired width of a flange, or a flat portion, as is wanted in most of such parts. The second essential in this process is adequate holddown (a plate or such like), which prevents the metal, forced upward by the congesting rubber, to rise higher than is wanted in the first step formation, or as shown in the 2nd operational stage. In the first stage of the process there undoubtedly is some "draw" of the metal from the flange. But in the second stage, with the "holddown" that much more secure, there will be "drawing out" of the metal, partly from the area of the step forming, and to a greater degree from the middle of the blank. In the third stage, this drawing-out of the metal will be much more pronounced. The tendency will be strong, for the rubber to press upward in the middle, bulging out in that direction, with the small area of the "steps" remaining "unfilled," and it will be found that a very slow working of the ram downward, will produce a more pronounced "step-forming" than a fast stroke would. The metal draws out slowly, and it might tear apart under a swift stroke. Also, the ram should remain down briefly, to allow the expanding metal (under the more equally distributed rubber pressure) to flow into the corners.

"Bottom Forming" Operation

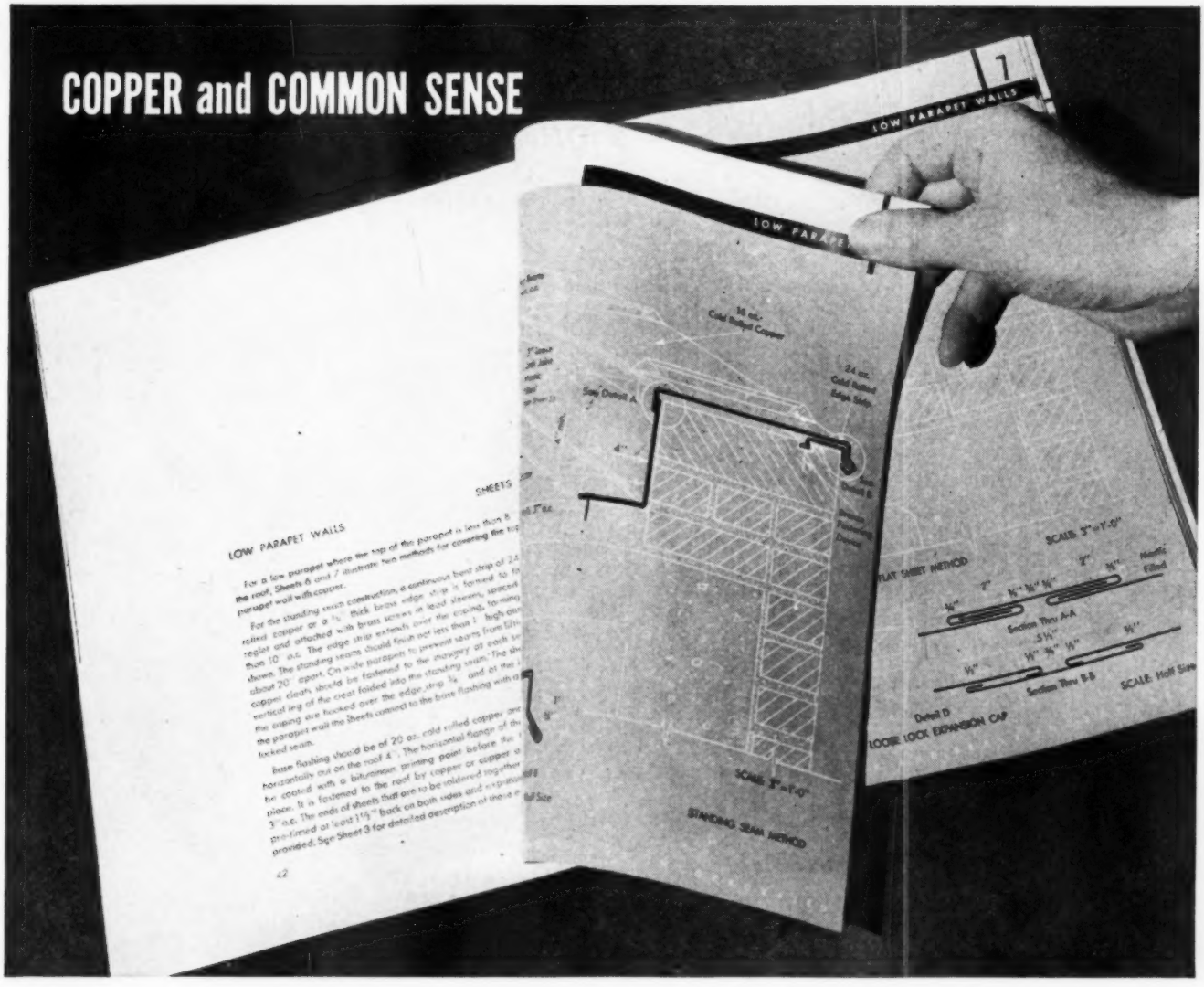
In Fig. 9 is shown "bottom forming," alluded to under Fig. 3. Here it is seen that the action of the press will bury the prongs of the form in the rubber, carrying the sheet metal directly under the prongs, into the rubber. Portions of the disc not directly under the prongs, will be moved upward by the upsurging rubber. Were the "flanges" narrower than shown (less than ¾"), the metal might be drawn into the form, interfering with its expansion to a spherical shape. Conversely, the wider the flange, the easier rubber will bend it over the prong, but there will be also more compression, so that the margin allowed for flange-forming should be neither too narrow nor too wide. Too wide a flange will produce wrinkles in the metal, which the rubber is incapable of smoothening out. (It takes steel dies to do that.)

As stated above, the blank will be partially drawn inward by the force of the rubber that flows into the form (see Fig. 10). The dotted line indicates the approximate elevation of the metal when fully formed. It is to be calculated that fully "one-half" of the difference between the straight line of the blank and the line of the raised metal, will be drawn in from under the foot of the form.

We calculate the blank portion intended to remain flat, and add to it, both for eventual loss by the metal being "drawn in," and for trimming to size, after forming. In positioning the blanks upon the rubber for processing, an outline of the form (let down upon the rubber by operation of the ram), is chalked or otherwise marked on the rubber, and blanks are then positioned within the marked space. In some cases "pins" are used through the flange (ring) of the form, protruding into holes made in the blank.

The "edge-upturn" pictured in Fig. 11 is practical only if the rubber is confined in casing not much larger than is the disc, and the upturn (flange) is at least ½" wide in metal not over the 22 gauge thickness. The softer the metal worked, and

(Continued on Page 150)



QUESTION: What's the best way to cover the coping on a low parapet wall?

ANSWER: See Pages 42 to 45 in "Copper and Common Sense"

NEARLY all architects and sheet metal experts agree that the best material for a parapet wall cover is copper. But there are several different forms of copper as well as many methods of construction. Revere's sheet copper research has shown which of these gives best results, and why. It has thrown entirely new light, not only on this subject, but on every important aspect of sheet copper construction.

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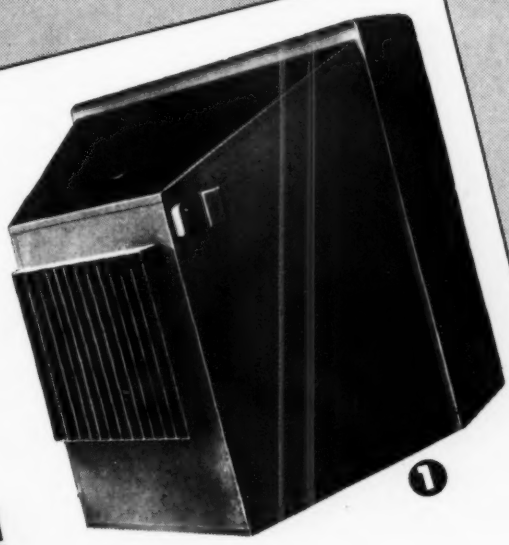

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Great National's sensational "All Weather" Control available with either model

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This improved Trade Mark...

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...now identifies an improved product

The *improved* Trade Mark and the *improved* product were shown first at the great Cleveland Heating Exposition in January.

Distributors, dealers and consumers all expressed their unqualified approval of both!

Hereafter the Trade Mark shown above will instantly identify these products with the name of the manufacturer—Cleveland Steel Products Corporation and with the city in which they are built.

Production has already started on the *improved* products, but please don't expect shipments of them before sixty or ninety days. We will do our best to get them into your hands as fast as possible.

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- Quiet operation.
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In Babylon, N. Y., buyers all sang the same song!

It's plain as day to Frank Swanson, president of Swanson, Inc., Timken dealers in Babylon, N. Y.— *Buyers prefer to wait for Timken Oil Heat, rather than accept immediate delivery of any other make.*

Here's Timkeneer Swanson's experience:

> Six homeowners in one city block had placed orders for Timken Wall-Flame Oil Burners. Naturally, all of them wanted installation *at once.*
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> Timkeneer Swanson was installing Timken Wall-Flame Oil Burners as rapidly as received, and in sequence of orders. But to help these six homeowners, special arrangements were made for installation of a few pressure burners of a well-known make.
>
> And what happened when Frank Swanson suggested this scheme? He got a flat "NO" for an answer. Every one of the six said, "No thanks! I'd rather wait for a Timken."

Exceptional? No, not at all! It's a story that has been repeated time and time again across the country. Timken Dealers find cancellations as scarce as the proverbial hens' teeth. *The more burners Timken Dealers receive (and they're receiving them at a record rate), the longer their waiting lists grow!*

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Brand preference for Timken grows more marked every day, and that's a song Timken Dealers enjoy!

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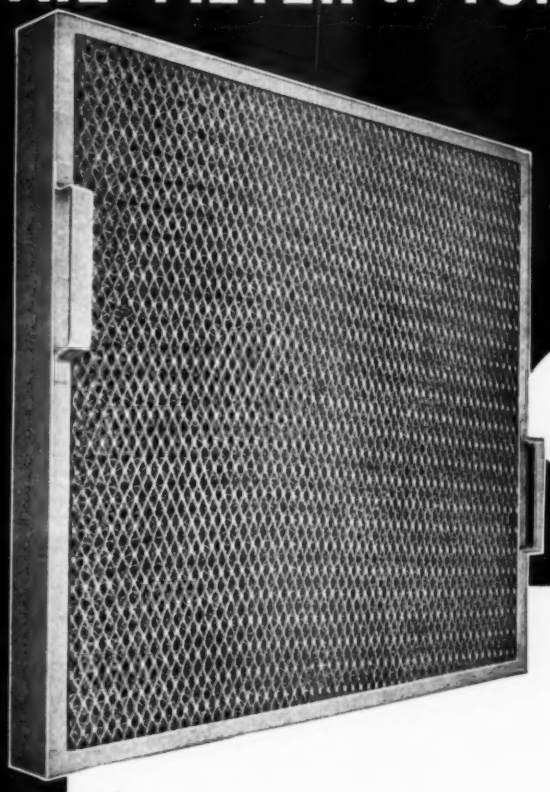

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TURBULENT CLEANSING ACTION

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Here's greater efficiency . . . lower resistance . . . longer life! Here's the new Agitair FM Filter with exclusive Turbulent Cleansing Action! This remarkable improvement in air filter design gives you air that's not merely strained but virtually scrubbed.

Agitair FM filters 50% more air at the higher velocity of 432 F.P.M. Two (2) FM's do the work of 3 ordinary filters . . . 33% reduction in space . . . fewer units to be installed . . . reduced servicing. This, coupled with higher dust holding capacity and rugged all metal construction makes it possible for Agitair FM to deliver unparalleled all-around filter efficiency.

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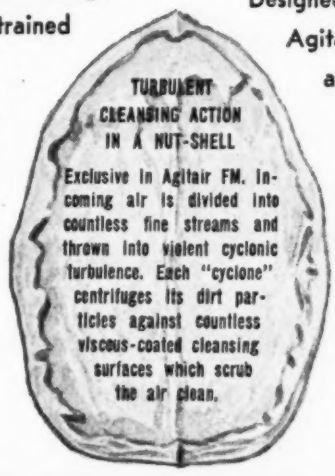
TURBULENT CLEANSING ACTION IN A NUT-SHELL
Exclusive in Agitair FM. Incoming air is divided into countless fine streams and thrown into violent cyclonic turbulence. Each "cyclone" centrifuges its dirt particles against countless viscous-coated cleansing surfaces which scrub the air clean.

When you specify filters remember: *Agitair FM removes more dirt from more air in less time.*

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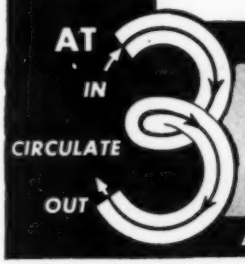
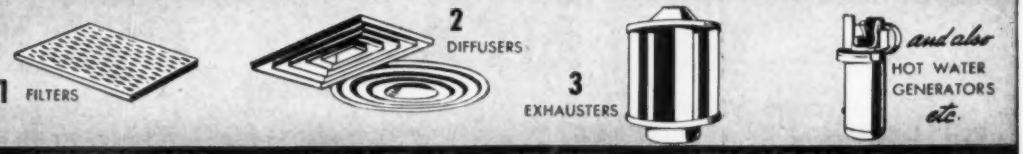


KEY POINTS IN AIR CONDITIONING—AGITAIR SERVES BEST



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NIAGARA Winter Air Conditioners and Gravity Furnaces are Backed by 55 Years' Experience

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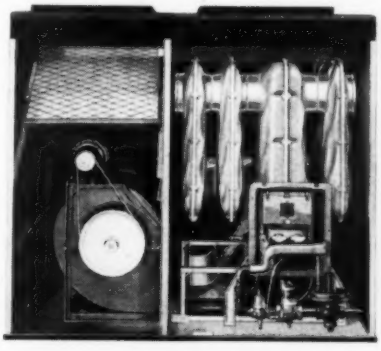

Series 20 with front panels removed. Available also with 3-speed direct-drive blower.

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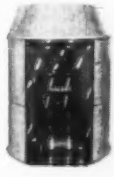
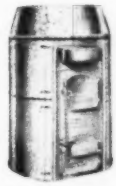


Coal-Fired Gravity Cast Iron

Coal-Fired Gravity Cast Iron



Coal-Fired Gravity Steel

GAS-FIRED *NIAGARA* COAL-FIRED

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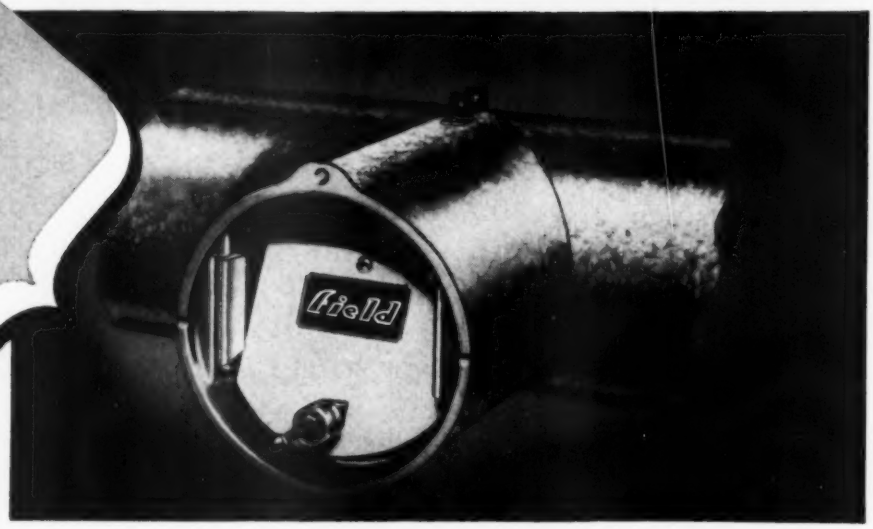
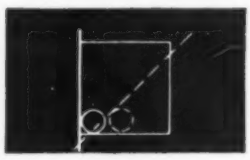
ON THE FINEST HEATING EQUIPMENT

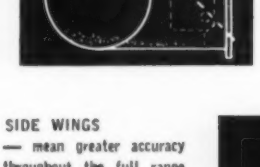
DRAFT IS CONTROLLED by Field



The famous Field design



ROLLING TYPE HINGE PIN — means no friction, no binding, no need for oiling, no fear of corrosion. Note the off-center gate mounting.



EXTENDED HOUSING — places gate outside the flow of fouling soot and gases — no warping, no binding.

SIDE WINGS — mean greater accuracy throughout the full range of the control. Fuel savings range up to 25%!

● **Because so much depends on proper control of drafts, leading heating equipment manufacturers are selecting the Field Barometric Draft Control as standard equipment. And alert dealers are installing Field Controls in all hand-fired furnaces in their territories. The installation is highly profitable, and provides a "door opener" for future sales of automatic heating equipment. Write today for facts on the Field line — most efficient, most accurate, most reliable draft controls made today.**

And the Field Control comes complete ready to install.

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ASSOCIATION ACTIVITIES

Los Angeles

INSTITUTE of Gas Heating Industries, Los Angeles, held its 1946 annual meeting on Dec. 12 at Eaton's Restaurant. President Frank Lawson opened the meeting and called for reports of the various standing committees. One of the most interesting activities of the Institute is the Short Courses on heating which have been arranged with the local colleges and a report on that subject stated that the courses are in operation with record attendance. The Managing Director of the Institute then gave a summary of the status of the merchandising aids that are in use and being developed.

The Nominating Committee was called upon for its recommendations for officers for 1947 and after these had been given, the membership voted to accept them unanimously. Officers for 1947 are:

President, C. A. Gabriel
Vice-President, R. Montrief
Secretary-Treasurer, A. B. Banowsky
Directors: R. Bridges
Walter R. Dicus
Fred Alleman
Ex-Officio: Frank W. Lawson

After acknowledgment of the elections by the new officers the guest speaker of the evening was introduced. He was Elliott C. Hensel, Advertising Counselor, and his speech was titled "Sales Opportunities for 1947." He summed up the tremendous advancement made by the Western states and also spoke of the fact that increasing supplies meant need for salesmanship.

E. W. KIMMELL, *Managing Director*

Michigan

MICHIGAN Sheet Metal, Roofing, Heating and Air Conditioning Contractors' Association has scheduled its annual convention for Bay City on March 9th to 11th. It will be held in the Winonah Hotel.

Mr. Jay Biddle of the Detroit Association and the secretary of the State Association were guests at a meeting of the Grand Rapids Association that discussed a subject of general interest. A revision of the city building code and fire ordinances was advocated by the members and city officials that were in attendance. Plans were made to draw up constructive legislation that would remedy these serious defects. Also brought up was the subject of licensing of heating contractors.

WILLIAM B. PINK, *Secretary*

Carolinas

CAROLINAS Roofing and Sheet Metal Contractors Association has announced that its annual convention will take place at the Ocean Forest Hotel, Myrtle Beach, S. C. on June 12th and 13th. Since these dates fall in the midst of the very busiest season at the beach all members have been urged to submit their reservations as quickly as possible.

The January issue of "The Carolinas Roofer" contained a report on the December mid-year meeting of the Association. Chief activity of the meeting was the passing of the resolutions that expressed the sentiment of the members on two topics of current interest. One requested manufacturers of building materials and supplies and all members of allied businesses to establish firm prices for materials and services, these prices to prevail for a definite period of time. At the end of this time adequate notice should be required of any change in prices. The other resolution advocated the abandonment of all controls over industry by the Government.

JOE H. PIPER, *Secretary-Treasurer*

NWAH&ACA Research Report

THE following report has been submitted to the membership of the National Warm Air Heating and Air Conditioning Association by Professor S. Konzo, covering the various activities being carried on at the University of Illinois Research Center.

New Research Residence (Roose)

a) Shingles have been stained. Prime paint coat applied to exterior wood surfaces.
b) Transite flues installed; one for furnace and one for water heater.
c) Gas line (200 ft.) now installed into area, and gas service is now available in house.
d) Space over ceiling steel joists now being covered with rock lath. Batt insulation being applied over the lath.

(Continued on Page 152)

Coming Conventions and Meetings

March 9-11—Michigan Sheet Metal, Roofing, Heating and Air Conditioning Contractors' Association. Annual. Winonah Hotel, Bay City, Michigan. William B. Pink Secretary, 719 Boulevard Bldg., Detroit 2, Mich.

March 24-26—Ohio Sheet Metal Contractors' Association. Annual. Commodore Perry Hotel, Toledo. W. E. Bogen, Secretary, 334 E. Livingston Ave., Columbus.

March 24-25—Sheet Metal Contractors' Association of Illinois, Annual. Jefferson Hotel, Peoria. W. Rex Shaw, Secretary, 695 E. State, Jacksonville.

April 8-9—New York State Sheet Metal, Roofing and Air Conditioning Contractors' Association, Annual. Clarence J. Meyer, Secretary, 567 Genesee St., Buffalo 4, N. Y.

April 28-30—Sheet Metal Contractors' National Association, Annual. Stevens Hotel, Chicago, Ill. Clarence J. Meyer, National Secretary, 567 Genesee St., Buffalo 4, N. Y.

June 12-13—Carolinas Roofing and Sheet Metal Contractors Association. Annual. Ocean Forest Hotel, Myrtle Beach, S. C. Joe H. Piper, Secretary, Box 599, Greensville, S. C.

June 16-18—Stoker Manufacturers' Association, Annual. Lookout Mountain Hotel, Lookout Mountain, Tenn.

Association Activities . . .

Buffalo

BUFFALO Warm Air Heating Association (formerly the Buffalo Sheet Metal, Warm Air Heating and Air Conditioning Assoc.) held its annual Dinner Dance in the Stanford White Room of the Hotel Markeen on Jan. 8th. The affair was attended by about one hundred couples.

The new slate of officers (AA, Jan. '47) was installed at the dance. Since membership in the Association had tripled in 1946 President Leo J. Olear thanked the retiring officers for the splendid job they had done and encouraged the incoming men to keep up the good work. Dinner was followed by a floor show and four hours of dancing completed the program.

L. J. WIEMAN, *Secretary*

●

Fox Valley

THE November meeting of the Fox Valley Furnace and Sheet Metal Contractors Association was held at Fairbanks Cafeteria November 19, 1946.

Minutes of the last meeting were read and approved.

There was a discussion in regard to the Job Training Program, and it was voted that the present committee be authorized and empowered to institute a school of GI's and civilians to be held in the Community High School at St. Charles, and that the Committee procure the instructor, and set up a course for the technical and practical fabrication of sheet metal.

There was also discussion regarding the freeing up of material. Various cases were cited which made it appear probable that barring unforeseen strikes, our industry will have plenty of merchandise and sheet metal soon after the first of the new year.

December meeting of the Fox Valley Furnace and Sheet Metal Contractors Association was held at the Black Hawk Restaurant in Elgin, December 17, 1946.

Geo. Bushman, director of the State Association, said that it is the opinion of the State officers that one should not keep too large an inventory, as it looks like there might be plenty of material in 1947, with the exception of a few items, such as motors.

Bill Stevens and Fred Lamp gave reports on the Job Training Program. A class for GI's and one for civilians will probably be started during the first week or two in January.

President Stowell recommended that we conduct a membership drive, and asked Fred Nolting and Mervin Lohbauer for Elgin, and Geo. Bushman and himself for Aurora, to bring in names of shops which do not belong to the Association.

Fred Lamp had been to a Job Training meeting with Bill Klinkey, Bill Jensen, and superintendent of schools Thompson, at the St. Chas. High School. The Job Training Program is really on the way!

WM. B. STEVENS, Secy.

●

Minnesota

SHEET METAL and Roofing Contractors' Association of Minnesota held its January meeting on Jan. 18 and the main topic of the meeting was the ever-present sheet steel shortage. A resolution was passed, in this connection, that is to be presented to the National Association. In attendance at the meeting was a representative of one of the larger steel warehouses and he discussed the program of steel allocation with the group.

Cook County

SHEET METAL Contractors' Association of Cook County held their regular meeting on Wednesday, Dec. 18 at the Builders Club, 228 N. La Salle St. Principal business for the meeting was the election of officers for 1947 and the following were chosen:

President, Lee Berghoefer
Vice President, Jerry Meyers
Secretary, Ed Nelson
Treasurer, Al Wagner, Jr.
Executive Committee: Aubrey Sykes
Lee Berghoefer
Wm. J. Parkinson

Meeting adjourned upon completion of elections.

WM. J. PERKINSON, *Publicity Committee*

●

United Roofing Contractors Association

THE 60th Annual Convention of the United Roofing Contractors Association took place at the Hotel Statler, Cleveland, Ohio, Jan. 20th to 22nd.

Main theme of the convention was information. Information on all the assorted shortages that have plagued roofers since the war ended. An attempt was made to secure as much accurate data as possible, so, to this end, prominent speakers were brought in from the F. W. Dodge Corporation, Asbestos Products Association, Department of Labor and the Asphalt Roofing Industry Bureau.

Also under discussion was the immediate future in the construction industry, insofar as expert opinion can predict that future. Every estimate seems to concur in the general belief that the months to come will see the greatest volume of construction, of all types, that the country has ever known.

●

OHI

THE regular quarterly meeting of the Board of Oil Heat Institute of America was held at the Hotel Commodore on Tuesday, January 14th, with President W. A. Matheson acting as Chairman.

A. E. Hess, Managing Director, reported arrangements had been completed to hold the 1947 Convention in the Traymore Hotel at Atlantic City on March 24, 25 and 26. He also reported completion of a contract with the Chicago Coliseum to house the 1948 Convention and Exposition during the week of April 5th, 1948.

C. R. Jonswold, Chairman of the Distribution Division, advised the Board that the Division continues to expand and that the work of the personnel has become so heavy that it is desirable to move the Division office from Chicago to the Institute headquarters in New York and employ a full time secretary. The Board accepted this recommendation and instructed the Managing Director to carry it out as soon as possible. The present Division secretary, F. B. Caldwell, will thereafter be able to give his full time attention to the increasing needs of the two Chicago Chapters of the Division.

The need for a standard means of determining the burning qualities of fuel oils has resulted in the construction of the first combustion comparator, to be known as the Combustion Reference Test Unit, Oil-Heat Institute of America announced this week following the regular quarterly meeting of its board of directors in New York.

In times past it has been possible to determine the burning qualities of fuel oils by analyses of their chemical and physical properties. But present day oils having almost identical prop-

erties by analysis may have quite different burning qualities. Nowadays to tell how an oil will burn it must be burned, and heretofore this has been troublesome because there have been no standard burning tests or burning apparatus. There was need for a standard apparatus in which to burn the oil to be tested, prescribed conditions under which to conduct the burning tests, and a scale to measure how well or how poorly the oil burned. It is this need that the Combustion Reference Test Unit will fill.

●

Indoor Comfort Conference—Chicago

MAKING the comfort survey, gravity heating, computation of heat losses, fundamentals of operation, and preparation for peak performance were among the many topics comprehensively discussed and illustrated at the Indoor Comfort Conference sponsored by the National Warm Air Heating and Air Conditioning Association at the Graemere Hotel, Chicago, January 13-14.

The conference, attended by approximately 100 dealers and manufacturers representatives, was the second in the series employing the visual aid method of presentation produced by Florez Incorporated of Detroit. The discussion was conducted by Guy Voorhees, Application Engineering Director of the association. Described as a "school" for beginners and a post graduate course for experienced heating men, the conference is specifically aimed at increasing the "know how" of heating contractors, salesmen, mechanics, engineers, estimators, and all the others concerned with the creation of indoor comfort through warm air heating. Based on the desire of the National Association to raise the standards of the industry through improved heating practices, the conferences are national in scope, and it is expected that eventually every major city in the country will have been covered. An idea of the size of the program can be gained from the schedule (AA, Jan. '47) which lists meetings through May 27, covering 25 cities. The conferences are non-profit and are arranged by local members of the association.

Monday, January 13

The session was opened by George Kalvog, a local contractor, who welcomed the guests and introduced members of the Chicago Steering Committee, Walter Knox, Lou Reining, T. Reid Mackin, Ira B. Brown, Ed Carter, Joe Wilder and Ross Mahoney. He then presented George Boeddener, managing director of the association, who turned the meeting over to Mr. Voorhees. The school began with a discussion of the basic fundamentals of warm air heating with emphasis on the obvious fact that when people buy a warm air heating plant they are specifically buying comfort, and that their complete satisfaction results in increased prestige for the contractor, and logically an increase in profits. At this point the first of the Florez visual features, "A Course at Comfort College" was presented. This sound slide film is based on the association's booklet, "Seven Steps to Indoor Comfort," and traces how each step produces a distinct effect, the whole of which results in complete comfort at all times, in every room of the house. Following this, the transmission of heat was discussed, after which the procedure of making a comfort survey was explained in detail. The afternoon session was taken up with a comprehensive study of heat losses through various building materials, infiltration, etc. In conjunction with this part of the conference, the plans of an actual house were used, and the problem was worked out on the association's work sheet. Mr. Voorhees injected into this discussion a legal point stressing the clear and definite understanding which must exist with the customer as to what the heating plant is expected to do. If there is a difference of opinion with the customer, it is not sufficient to merely strike out the guarantee. A declaration contrary to the guarantee must be written into the contract in order to make it mutually binding.

Gravity heating was the topic at the evening meeting and consisted of a discussion of Btu loss, sizing the furnace, location of return air registers, sizing of cold air returns, duct design, warm air leaders and cold air return ducts, and location of warm air registers.

Tuesday, January 14

This section of the conference began with a review of the material on gravity heating, after which the principles of register location were presented. This consisted of a discussion of the graduated duct system for large houses, and the extended plenum system for smaller houses. The theories governing the use of round and rectangular ducts were presented as well as the factors affecting heat. The use of standardized ducts was discussed and recommended as a valuable time saver in sheet metal shops. The idea being, that if less time were spent in forming and hammering and the other routines of fabricating duct work, more time could be spent on sales and service. Highlight of the afternoon session was the sound film strip, "It's Comfort They Bought." The title contains the obvious implication that "it's comfort they should get," and the film presents the problem of the cold room as well as the general issue of the "cold 70." Shown clearly and simply are the steps whereby that condition can be corrected. Considerable emphasis was placed on the subject of continuous blower operation, chiefly because it is an accepted fact that thousands of heating systems even now in operation need adjustment for continuous blower operation before complete comfort and satisfaction can be attained. It is strongly felt by the association that the adjustment of forced warm air systems for continuous blower operation will be a great forward step, benefitting not only individual dealers and contractors, but the industry at large.

At this point it might be well to bring in that throughout the entire conference the subject matter of the lectures was generously interspersed with a number of actual case histories which Mr. Voorhees has gleaned in his more than 36 years as a practical furnace man with experience in almost every phase of warm air heating. The remainder of the afternoon was devoted to Fundamentals of Operation and Preparation for Peak Performance. Mr. Voorhees explained the information contained in the association's mimeographed bulletin "Principles and Procedure of Continuous Blower Operation," which emphasizes the use of testing instruments and details the procedure in setting the fuel input, adjusting the barometric stack damper, setting the blower speed, setting the limit control, final blower control setting, balancing the system and final thermostat setting. The bulletin also contains a number of helpful suggestions with regard to dealer-customer relations. The conference ended with a general question and answer discussion.

Among the officers of the National Association who attended the conference in Chicago were Frank E. Mehrings, president, Hugh Thompson, chairman of the dealer committee, and W. E. Redrup, chairman of the installation codes and application engineering advisory committees. Tentative plans have been made to hold at least two more Indoor Conferences in Chicago sometime in June.

IMPROVE YOUR KNOWLEDGE OF AIR CONDITIONING

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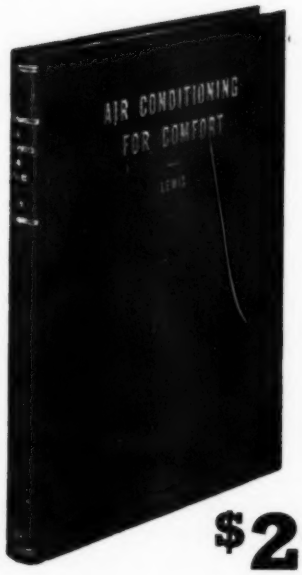

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Here is a book that presents—in simple, readily understandable form—every kind of information necessary for an accurate and thorough knowledge of air conditioning principles, equipment, and practices. Written by S. R. Lewis, a widely-known consulting engineer who has been active in air conditioning work for more than thirty years, it deals with all angles of the air conditioning subject from the practicing engineer's viewpoint. The designing procedures explained in the book are, for example, in every detail the same procedures employed today by the author's own organization.

Featuring this third edition are chapters on phases of the subject not previously treated, including noise control, air conditioning measurements, air conditioning standards, fire protection codes and operating suggestions. Several complete examples of correct design procedure are given, together with forms for recording the design data, the proper filling-in of which are explained step-by-step.

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CHAP. 5—The Psychrometric Table and Chart
CHAP. 6—Humidity Controllers and Control
CHAP. 7—Heat Transmission Through Barriers
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CHAP. 9—Heating Systems
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CHAP. 18—Noise and Its Control
CHAP. 19—Air Conditioning Instruments and Measurements
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HELPING to build and maintain markets for Chrysler Airtemp home heating, air conditioning and commercial refrigeration dealers, Chrysler Airtemp employed more than fifty million advertising messages in 1946. Now the 1947 campaign is under way! Above are some of the advertisements which appeared in January and February. Leading the list are full-color advertisements in the Saturday Evening Post, which has a circulation of 3,710,392!

This national advertising drives home the story of the advanced design and high quality of Chrysler Airtemp Products. It stresses the point that these are products of Chrysler Corporation engineering and mass production skill and experience — famous around the world, and accepted as assurance of high quality and proved dependability at reasonable cost.

Public acceptance created by such products and such national advertising spells year-around profit opportunities for Chrysler Airtemp dealers—today, tomorrow and in the years to come! Perhaps you are interested in this Chrysler Airtemp business opportunity. Dealer agreements are written for one, two or all three of the Chrysler Airtemp lines. For information, you are invited to write Airtemp Division of Chrysler Corporation, Dayton 1, Ohio; in Canada—Therm-O-Rite Products, Ltd., Toronto.

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CHRYSLER AIRTEMP
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FOR YEAR-AROUND DEALER PROFITS

HEATING • AIR CONDITIONING • COMMERCIAL REFRIGERATION

Equipment Developments

For your convenience a number has been assigned to each item. Circle the items in which you are interested on the coupon on page 130 and mail to us.

△ *Indicates manufacturer not listed in 1947 Directory.*

• *Indicates type of product not listed in 1947 Directory.*

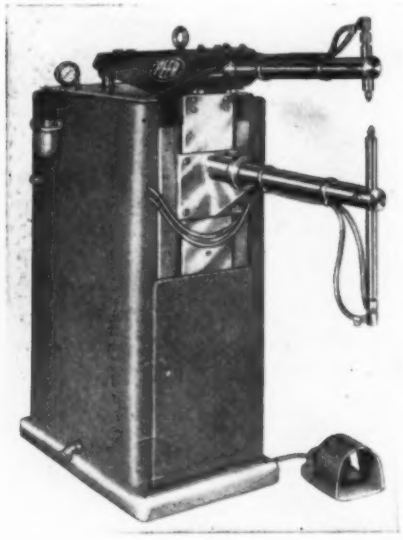
1—Superfex Furnaces

Two new series of oil-fired furnaces are a recent development of the Perfection Stove Co., Cleveland, O. Designated as the Superfex Eighty-Two and Superfex Ninety-Two both are rated at 70,000 Btu at the bonnet. Chief distinction between the two is that the Eighty-Two is primarily for basement installation while the Ninety-Two is for the utility room type of heating job.

Both series may be obtained as winter air conditioning units but the Eighty Series may also be secured without the blower. All furnaces are furnished with complete controls. — *Perfection Stove Co., 7609 Platt Ave., Cleveland 4, O.*

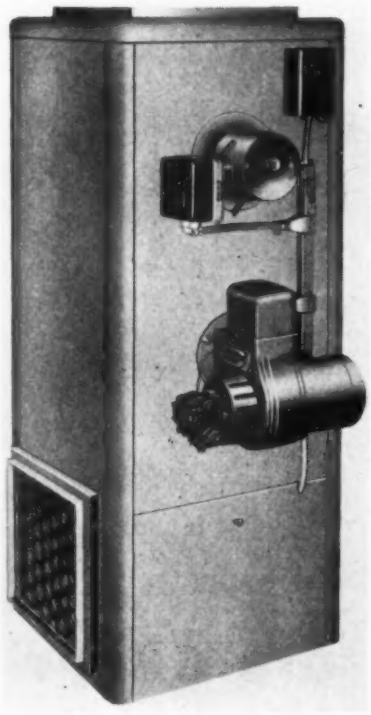
2—"Peer" Welder

A Series A-200 line of high-speed, automatic, air-operated, rocker arm spot welders has been announced by the Pier Equipment Co. of Benton Harbor, Mich. Electrode pressure is provided by a double-acting air cylinder of large capacity. The rocker arm is mounted on roller bearings to increase the operating life of the machine.



Capacities of the new line are 10 and 15 KVA with throat depths ranging from 8" to 30".—*Pier Equipment Mfg. Co., 1440 Milton St., Benton Harbor, Mich.*

3—"Warmaire" Unit



A completely "packaged" oil fired Winter Air Conditioning unit, the "Warmaire," has been introduced by York-Shipley. The unit is shipped complete from the factory and installation is a matter of a few connections.

Rated at 65,000 Btu at the bonnet the new unit can be used either in a basement or is also small enough to fit a utility room. It may also be used without ductwork. — *York-Shipley, Inc., York, Pa.*

△ 4—Camloc Fasteners

A complete line of fasteners for all quick-opening requirements are being turned out by the Camloc Corporation of New York City.

Designed for original installations and also for replacements these fasteners found wide use in the airplane industry during the war. — *Camloc Fastener Corp., 420 Lexington Ave., New York 17, N. Y.*

• 5—Monel Clad Strip

A late development in steel processing is the nickel and Monel clad strip steel that has been announced by Superior Steel of Carnegie, Pa.

This product is available in all standard widths and thicknesses and can be made with cladding on only one side or both sides. The clad is figured at ten per cent of the total thickness of the strip.

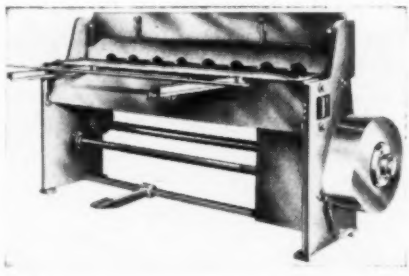
A feature of the strip is that the cladding cannot be separated from the base metal by mechanical means or by heating.—*Superior Steel Corp., Carnegie, Pa.*

△ 6—Solder Flux

Soldering flux in stick form is the feature of "Flux-Stik," a new chemically advanced solder. While non-acid, "Flux-Stik" dissolves the acids of metals and prepares the surface of the metal so that no prior cleaning is necessary. It can be applied to metal whether cold or hot and is non-running, therefore convenient for overhead and inaccessible soldering locations.—*Lake Chemical Co., 607 N. Western Ave., Chicago 12, Ill.*

7—Power Shears

A new line of all steel power squaring shears has been announced by the Parker Co., Santa Monica. Built of heavy steel plate in a box-type design the shears are made in capacities up to 14 gauge.



A feature of these shears is that they will cut drawn or folded parts up to within 1½" of the shoulder, making it possible to trim deep-drawn objects closer.—*Parker Manufacturing Co., 2200 Colorado Ave., Santa Monica, Calif.*

A Sensational New Stride in Heating!

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PATENTED
The Scotch Heater

THE *Coroaire* HI-BOY

GAS FIRED WINTER AIR CONDITIONER

NOW! A brand new basement-installed gas heating unit—with the same remarkable efficiency and economy as the COROAIRE console heater—and the same profit advantages! That's the COROAIRE HI-BOY! It heats, cleans, humidifies and filters for complete winter air conditioning.

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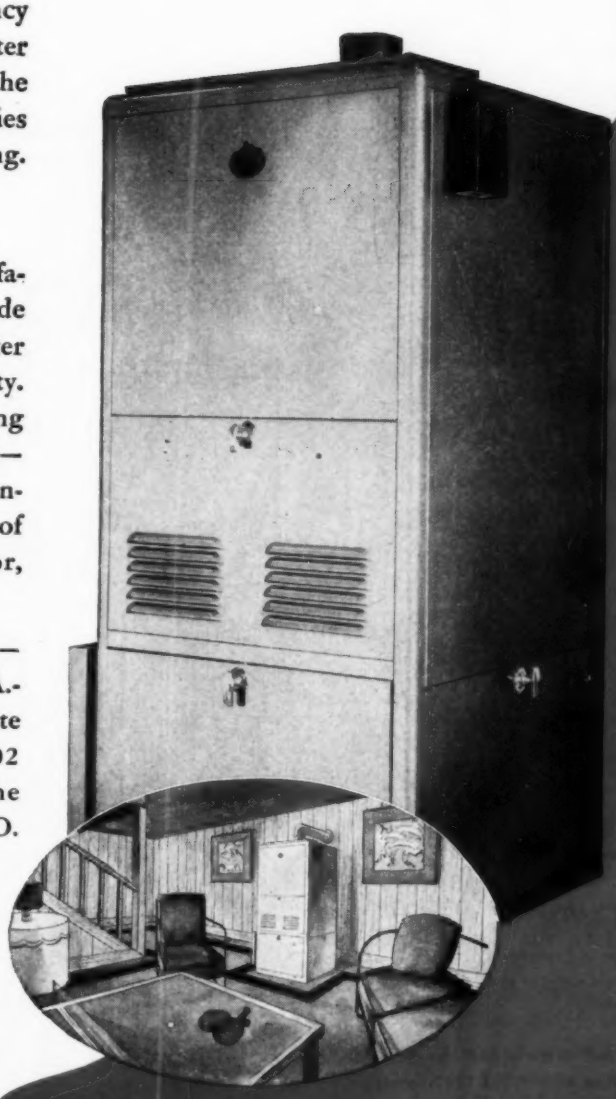
The heart of the COROAIRE HI-BOY is the famous patented Venturi tube heat exchanger, made of cast iron. That means greater efficiency, greater distribution of heat, greater heating capacity. You get it because of a 5 sq. in. to 1 sq. in. wiping surface on the exterior and a 28-foot flue travel—against 6 to 8 foot flue travel on other conventional types of heat exchangers. It's the dream of every heating engineer, builder, distributor, dealer and user!

The COROAIRE HI-BOY is sturdily built—finished in Blue Hammerloid enamel. A.G.A.-approved controls—quiet operation—complete safety features. Write today for Booklet c-802 for full information and specifications. The Coroaire Heater Corporation, Cleveland 15, O.



The COROAIRE HI-BOY is so completely a self-contained package unit that it will fit into any basement decorative scheme.

SPECIFICATIONS

COROAIRE HI-BOY—Model 85-S-HB

width overall	26″
depth overall	28″
height overall	59 9/16″
intake (cold air)	16″ x 25″
discharge	8″ x 25″
weight	566 lbs.

THE COROAIRE HEATER CORPORATION

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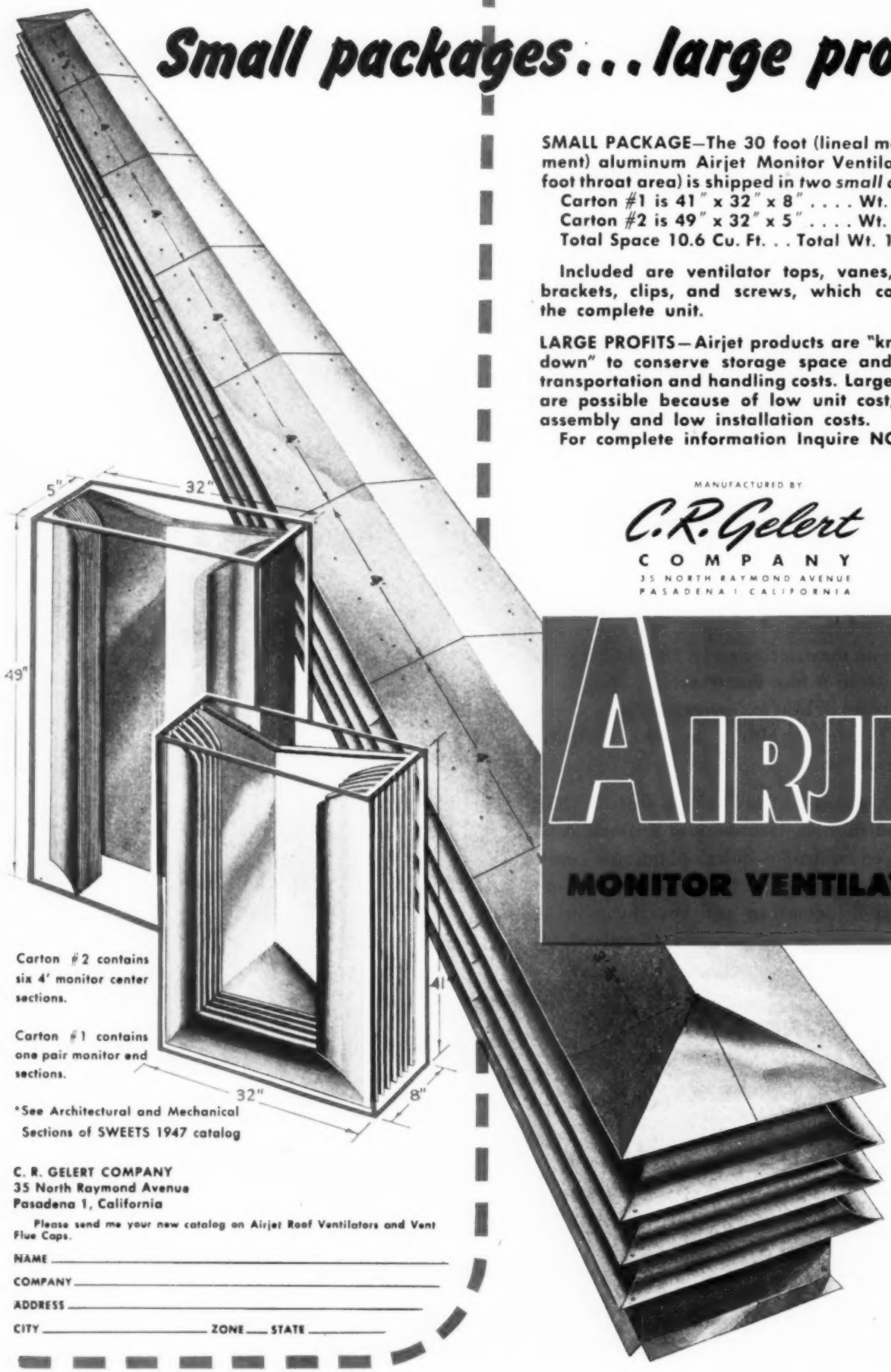

SMALL PACKAGE—The 30 foot (lineal measurement) aluminum Airjet Monitor Ventilator (60 foot throat area) is shipped in *two small cartons:*

Carton #1 is 41" x 32" x 8" . . . . Wt. 29 lbs.
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Carton #2 contains six 4' monitor center sections.

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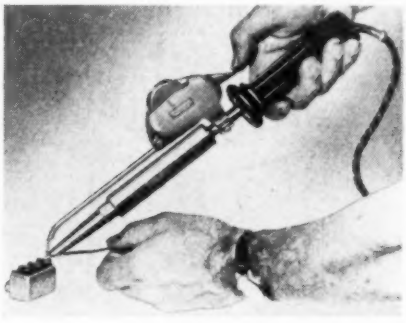
Equipment Developments . . . . . .

For your convenience in obtaining information regarding these items, use the coupon on page 130.

• 8—Solder Dispenser

A patented solder dispenser called "Kwikfeed" has been introduced to eliminate the need for using both hands in a soldering operation. The device can be attached to any soldering iron by means of an adjustable adapter leaf and it has a positive ratchet feed for dispensing the solder.



By freeing one hand Kwikfeed makes it possible to adjust the work as it is being handled. — *Sound Equipment Corp., 3903 San Fernando Road, Glendale 4, Calif.*

9—Gas Furnace

A utility room, gas fired forced air, pressed steel furnace has been announced by the Morrison Steel Products Co. Specifically designed for the small installation the furnace has a bonnet output rated at 58,000 Btu and comes complete with all standard controls. It also complies with requirements of the American Gas Association.—*Morrison Steel Products Co., 601 Amherst St., Buffalo 7, N. Y.*

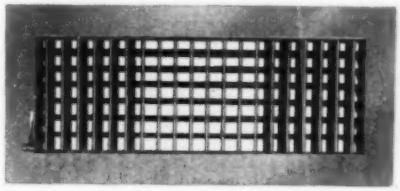
10—Gas Valve

A magnetic Gas Valve has been introduced by Gleason-Avery that is designed to control the flow of natural or manufactured gas in domestic heating systems, gas conversion burners and other gas fired units.

This Model SG No. 1 can be used with any two-wire snap-action room thermostat and may be easily installed in a vertical position between the gas supply valve and the burners. An arrow on the side indicates the direction of the flow of the gas. Provision is made for manual operation in case of prolonged power failure. — *Gleason-Avery, Inc., Auburn, N. Y.*

11—"Tri-Flex" Grilles

"Tri-Flex" Grilles and Registers have been developed by Tuttle & Bailey for the control of air distribution in commercial and industrial air conditioning installations. These products control air delivery in three ways: control of direc-



tion, control of throw and control of air drop. Tri-Flex makes use of various combinations of deflector blades and shutters to produce the components of the line.—*Tuttle & Bailey, Inc., New Britain, Conn.*

12—Window Cooler

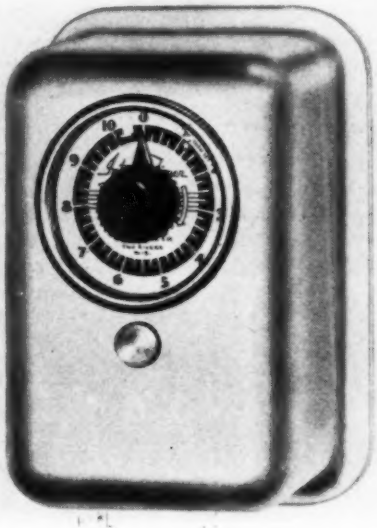
The makers of "Sno-Breeze" evaporative coolers have brought out an adjustable window type cooler that will fit any window between twenty-four and thirty-four inches in width. All controls are placed on the front of the cooler so that it may be operated from within the room.

The cabinet of this unit is made of 22 gauge rust resistant steel and it features a 16" fan powered by a 1/25 hp motor. —*Palmer Manufacturing Co., 705 W. Jefferson St., Phoenix, Ariz.*

13—AC Welder

An alternating current electric arc welder that has been designed to duplicate the wide range of output inherent in DC welders is being marketed by the Lincoln Electric Company under the name "Fleet-Arc." A separate power transformer and adjustable reactor control are used to accomplish the above range of output and these also simplify the welding of thin sheets and light gauge material.

All controls on the new welder have been made to operate with the minimum amount of effort on the part of the operator as a step toward increased efficiency.—*The Lincoln Electric Company, Cleveland 1, Ohio.*



14—Fan Timer

As a result of the increasing popularity of attic and window fans for summer ventilation and cooling the Paragon Electric Co. has brought out a series of Attic Fan Timers. These timers are designed to open the fan circuit (thus turning off the fan) at any predetermined interval over a period of ten to twenty hours.

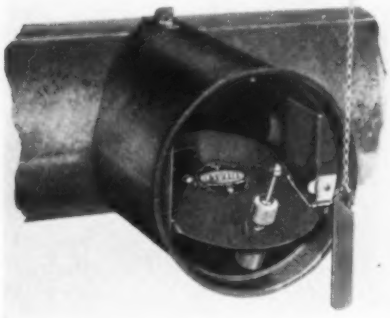
Completely electric the timers are powered by Telechron self-starting synchronous motors and will operate on 24 or 115 volt A.C. current, regulating any A.C. fan. They carry the approval of the Underwriters Laboratory.—*Paragon Electric Co., 1608 12th St., Two Rivers, Wisconsin.*

Equipment Developments . . . . . .

For your convenience in obtaining information regarding these items, use the coupon on page 130.

15—Draft Control

"Barocheck," a combination automatic barometric draft control and check damper has been introduced by Field Control. This new model control has been fitted with a lever so that it



would combine the features of a draft control and a check damper. It is suited for use with a thermostat and damper motor as well as with hand controls.—*Field Control Div., H. D. Conkey & Co., Mendota, Ill.*

16—Water Heaters

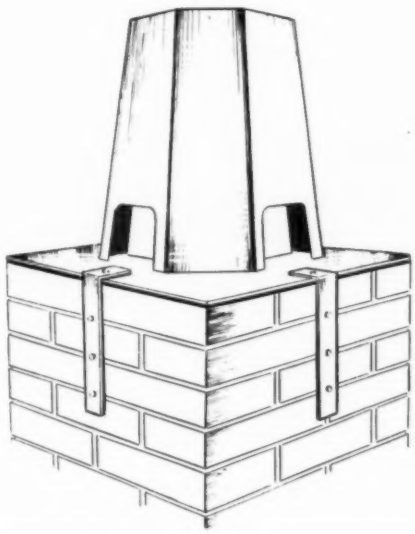
A line of oil burning hot water heaters ranging in size from 25 gallons to 80 gallons are in production at Calesco Corporation. The two smaller size units have a vaporizing oil burner and the larger units have a gun type burner. The heaters are furnished complete with controls and a feature is the fact that all tanks are made of heavy gauge copper and are guaranteed for twenty years.—*Calesco Corporation, 58 Buffam, Lynn, Mass.*

17—Oil Burners

Two models of oil conversion burners are being made by the Calesco Corp. The smaller model has a capacity up to 1.25 gallons per hour while the larger ranges up to 4.5 gallons. With all parts being standard stock items these burners are manufactured to meet the requirements of Bureau of Standards Bulletin CS-75-39.—*Calesco Corporation, 58 Buffam St., Lynn, Mass.*

18—Chimney Top

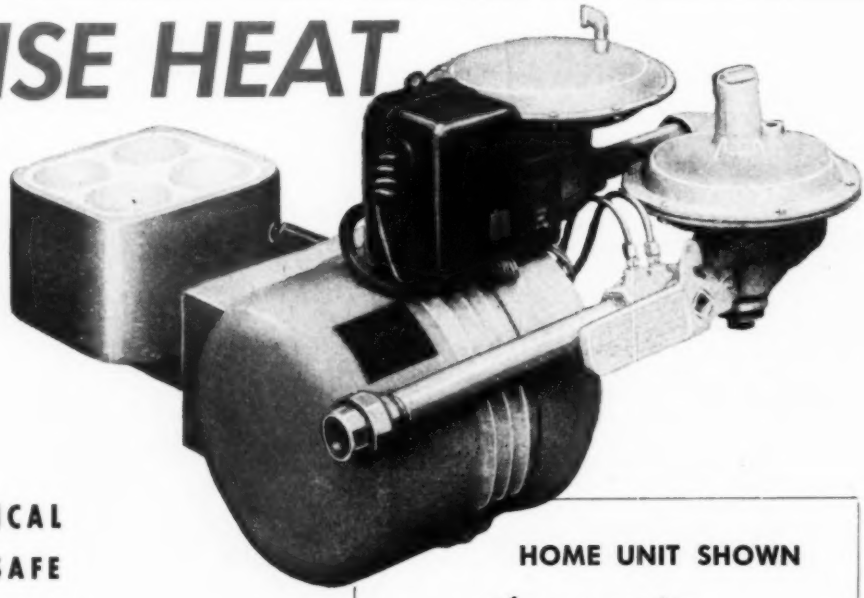
The Messer Chimney top has been designed to combat smoke and backdraft as well as to eliminate the settling of rain and atmospheric disturbances into the flue channels. Made of galvanized steel it has a flange which extends over the top of the chimney to stop disintegration of mortar.—*The J. H. Messer Co., 7240 Bennett St., Pittsburgh, Pa.*



FINN-TENSE HEAT

POWER TYPE

GAS BURNER



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Patents Applied For

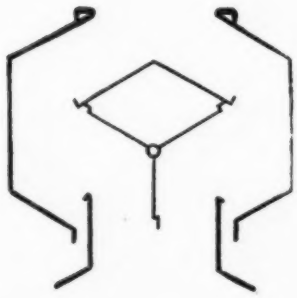
Continuous Roof Ventilator

HERE is a freshly designed continuous or ridge type ventilator that eliminates objectionable features and adds new highly desirable features to roof ventilation. It *gets the air out* of buildings quickly and efficiently under all weather conditions. It has no angle or bar braces, or other impediments to efficient exhaust flow. It can be installed on any type of roof in any length desired—always providing 100% exhaust opening per size. Note its *exclusive* features.

It is a ventilator you will be proud to recommend and install—that will bring you repeat business—not maintenance and repair calls. It is extremely easy to handle and economical to erect. Your customers will praise its performance. Furnished in sizes from 6" to 24" throat openings.

Plasteel Engineers will gladly assist you on any ventilation problem.

Write, Wire or Telephone for Complete Information Today



EXCLUSIVE FEATURES

- **100% exhaust opening per size of ventilator. 100 feet of 12-inch Air Control provides *100 sq. feet of clear exhaust opening*—not impeded by any structural members. Other sizes proportionately.**
- **Y Damper provides *free flow exhaust.* Thus highest efficiency is maintained.**
- **Drainage gutters guide rain to *ends of units* where it is drained onto the roof. Water *does not pour over sides of ridge caps* and impede building exhaust during rain storms.**
- **No interior angle or bar bracing is used. Greater strength and rigidity are obtained and nothing impedes the exhaust flow.**
- **Individual units are 8 feet long. Entirely self contained. Can be used singly or continuous in any length desired.**

A Few Choice Territories Are Still Open for Representation

PLASTEEL ROOFING · PLASTEEL AIR CONTROL

PLASTEEL PRODUCTS CO.

General Office and Plant • Washington, Pennsylvania

Equipment Developments . . . . . .

For your convenience in obtaining information regarding these items, use the coupon on page 130.

19—Cleaning Compound

"Paintbond," an anodizing compound that can be used at room temperature to prepare aluminum and aluminum alloys for painting and lacquering, has recently been introduced. To clean the surface of any aluminum alloy of grease and dirt it may be sprayed, brushed or dipped in Paintbond (dipping being advocated by the manufacturer). After this treatment any suitable primer may be used before the final finish coat.—*Technical Processes Division, Colonial Alloys Co., Ridge Ave. and Crawford St., Philadelphia, Pa.*

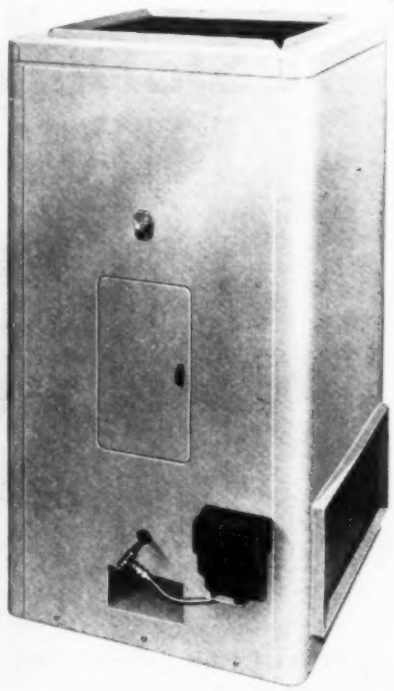
20—Gas Burner

The "Chore Boy" residential gas burner, for installation in all types of furnaces has been placed on the market. These units are tested at the factory and then packaged in a special crate which makes it possible to slide the burner right into position when installing. A single large burner head is used in this burner and the pilot is located in direct contact with the burner to provide quick and quiet ignition. All standard controls are furnished with the unit and it carries AGA approval.—*Standard Fuel Engineering Co., 671 Post Ave., S., Detroit 17, Mich.*

21—Oil Furnace

Production of the 1947 model 377-G of Evans oil-burning furnace has been announced by the Evans Products Company, Plymouth, Mich. This is a completely automatic, gravity circulation type furnace for basement installation. Since the bonnet capacity of the furnace is 70,000 Btu and the gross output is 74,000 Btu, it is suited to installation in the five room house which has been playing so large a part in the building program.

Features of the unit are a combustion chamber of heavy-gauge steel coated with a special rust-preventive, an automatic draft regulator, complete controls and provisions for thermostat installation.—*Evans Products Co., 15310 Fullerton, Detroit 27, Mich.*



★

Sheet metal men everywhere are turning out accurate work quickly and easily with Niagara machines and tools for shearing, blanking and forming sheet metal.

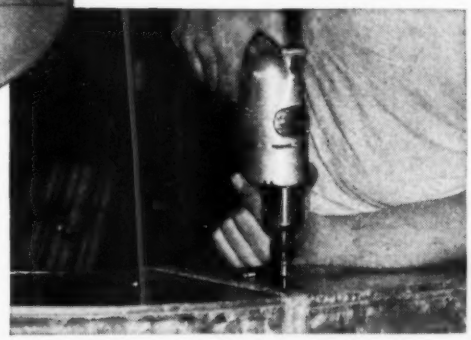
NIAGARA
MACHINE & TOOL WORKS
BUFFALO 11, N. Y.
District Offices:
Detroit, Cleveland, New York

Why not find out NOW about RUDY'S new 1947 version of its famous cast iron OIL-FIRED air conditioners? Some scheduled production has not yet been allocated. RUDYS have been leaders for 30 years.

RUDY FURNACE CO.
DOWAGIAC, MICH.

You Name it . . . They Drive it

Self-Tapping Screws • Wood Screws • Machine Screws • Nuts and Bolts



B & D POSITIVE CLUTCH SCRUGUN speeds up production on such jobs as fabricating air conditioning ducts.

ADJUSTABLE CLUTCH SCRUGUN . . . one of many Black & Decker models . . . automatically drives screws and nuts to uniform tension.

Black & Decker Electric Screw Drivers and Nut Runners speed up every type of sheet metal assembly work . . . from the most delicate screw driving operations to driving and tightening nuts and bolts up to 1″ diameter or lag screws up to ¾″ x 6″. Light, compact, easy to handle . . . these powerful tools insure top-speed performance with greater accuracy and uniformity and minimum operator fatigue.

For full information about all models . . . and other Electric Tools for heating, piping and air conditioning work . . . see your nearby Black & Decker Distributor. For your free copy of our 60-page, illustrated "Power Assembly Tool Data Book," write to: The Black & Decker Mfg. Co., 682 Penna. Ave., Towson 4, Md.

LEADING DISTRIBUTORS EVERYWHERE SELL

Black & Decker
PORTABLE ELECTRIC TOOLS

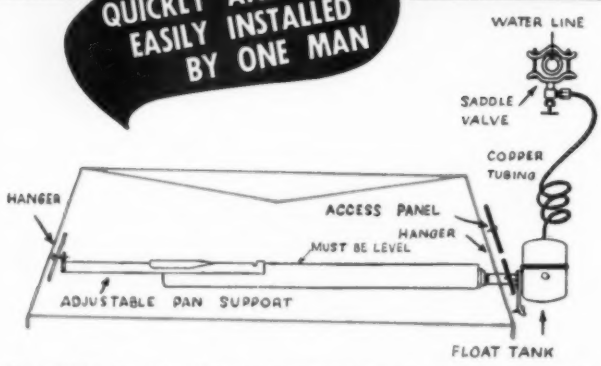
ELECTRIC DRILLS ELECTRIC SHEARS BENCH GRINDERS WIRE BRUSHES

Another VIKING profit builder the Series 1900 Humidifier . . .

Specially Designed for Gravity Heating Systems

. . . where space is not a critical factor. The Viking Series 1900 Humidifier is an all copper, V shaped unit with over 200 sq. in. of exposed water surface . . . providing adequate evaporation (humidification) for any size gravity heating system

QUICKLY AND EASILY INSTALLED BY ONE MAN



The VIKING Series 1900 Humidifier is equipped with a telescopic pan support and will fit all sizes of bonnets or plenums. No special tools are required for the installation. Simply drill the front of the bonnet for a ½" pipe nipple . . . attach the front and rear hangers with sheet metal screws . . . install the humidifier pan and couple the float tank . . drill a ⅜" hole in a convenient water line and install the saddle valve . . . connect the saddle valve to the Viking Top Seat Float Valve in the float tank and the installation is complete. A 4" or 5" hole cut just above the float tank will facilitate installation. A plate is furnished for use as an inspection door for occasional checking.

Make an EXTRA Profit on every Furnace Cleaning Job

Any householder interested in having his furnace cleaned or re-set is easily sold the VIKING Series 1900 Humidifier. Requires little, or no additional time to install while your working on the furnace. Assures your customer all-season, automatic humidification. Costs you only $8.95, easily worth $15.00 to any discriminating householder. Carry one with you on every call.

NOW is the time to **CASH IN** on this item

While your customers are conscious of their furnace requirements . . . when they're getting set for the heating season ahead. Write today . . . get complete information all VIKING Humidifiers . . . or, better still . . order enough Series 1900 Humidifiers to take care of your present requirements. Immediate shipment from stock, or from your jobber.

MAIL THE COUPON *Today*

Viking

ARMY E NAVY FOR EXCELLENCE

AIR CONDITIONING CORP. 5600 WALWORTH AVE. CLEVELAND 2, OHIO

Gentlemen: Please ship at once
_____VIKING SERIES 1900 HUMIDIFIERS at $8.95
NAME_____
ADDRESS_____
CITY_____ZONE____STATE_____
☐ Bill thru my jobber ☐ Check enclosed
My Jobber is_____
☐ Send Viking Humidifier Bulletin JD 313

New Literature

For your convenience in obtaining information regarding these items, use the coupon on page 130.

1—Control Equipment

A comprehensive catalog of their complete line of control equipment has been issued by the White-Rodgers Company. A feature of this catalog is the fact that it contains not only equipment specifications but also dimensions, applications, installation, setting and adjustment and wiring diagrams.

The different types of controls are in individual catalogs and they can be retained in the original folder or can be inserted in loose leaf binders.—*White-Rodgers Electric Co.. 1209 Cass Ave., St. Louis 6, Mo.*

2—Aluminum Data

Reynolds Metals Company has published a 248-page book that contains 106 tables of technical data on aluminum, its alloys and various properties and characteristics. There are also sections dealing with mill products and others giving tables of measurement and shrinkage allowances and the like.

A special section relates the various specification designations that are used by different organizations such as the Army and Navy and ASTM. Price $2.00.—*Reynolds Metals Co., Dept. 47, 2500 So. Third St., Louisville 1, Ky.*

3—Flame Cutting

An illustrated bulletin on flame cutting has been issued by Joseph T. Ryerson & Son. The booklet describes their facilities for producing plain and intricate shapes by the flame cutting process. It also shows some typical flame cut sections and gives information regarding the use of irregular shaped plates for maintenance and production.—*Joseph T. Ryerson & Son, Inc., 2558 W. 16th St., Chicago 80, Ill.*

4—Ad Campaign

Holcomb and Hoke have announced a comprehensive plan for cooperative advertising in connection with their "Silent Breeze" ventilating fans. This plan includes a line of newspaper mats, arranged for dealer imprint, and also sets up a fund on the basis of shipments of fans to distributors and dealers, to finance advertising using local media. A plan for financing at distributor, dealer and retail level has also been developed by the company.—*Holcomb & Hoke Mfg., Co., 1545 Van Buren St., Indianapolis 7, Ind.*

5—Tool Catalog

The 1947 Scherr Tool Catalog is being distributed by the George Scherr Company. There are several major divisions in the catalog which list: Laboratory instruments, Machine tools, Machinists' tools, Measuring instruments and toolroom specialties. Complete information is included on all these items and other miscellaneous products.—*George Scherr Co., 200 Lafayette St., New York 12, N. Y.*

6—Stamping Trimmer

The Quickwork-Whiting Stamping Trimmer is featured in a bulletin issued by the Whiting Corporation. It describes the application, operation and specifications of this machine and contains many photographs and drawings of jobs that have been done.—*QW-121, Whiting Corp., Harvey, Ill.*

TRIANGLE SHOCK ABSORBING PILLOW BLOCK

Designed by Triangle engineers for fans, blowers and other devices requiring silent operation, perfect alignment and self-lubrication.

Preloaded oil-proof cushion built into the bearing.
Ball-and-socket design.
Write for samples and complete information.

TRIANGLE MANUFACTURING CO.

392 DIVISION STREET OSHKOSH, WISCONSIN

"GIVE US AN AUTOMATIC HEATING UNIT"

This Was the Talk of the Show

Here it is—Peerless Oil Master

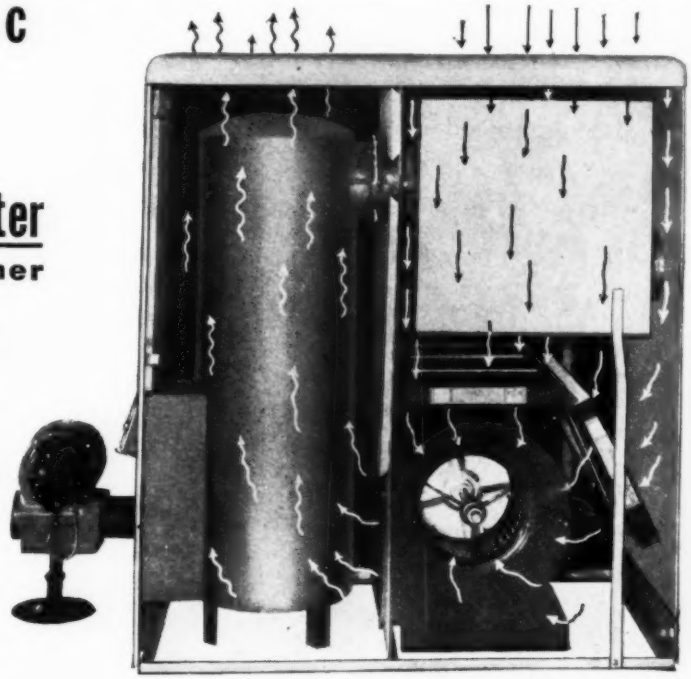
with built-in winter air conditioner

At the recent International Heating and Ventilating Exposition held in Cleveland, Ohio, dealers from everywhere were asking about a furnace similar to the Peerless Oil Master.

The Master design employs the counter-flow principle of heat transfer. This design promotes greater heating efficiency along with cleaner air. The heavy arc-welded steel boiler combustion chamber and radiator give you greater heating efficiency and many years of satisfied service.

Here is the heating plant that you have been looking for. Beautiful, compact, engineered to give all the newly discovered features of economy and efficiency. Write today for complete descriptive literature; also inquire about our complete line of warm air heating equipment, fittings, etc.

Pioneers in warm air heating equipment for almost half a century.



Oil "MASTER" with side panels removed to show position of radiator, filters, blower unit, combustion drum and final heating chamber.

Manufactured by

Peerless Foundry Company, Indianapolis 7, Indiana

H&C No. 130 Baseboard Register

To Make the Best of A Tough Situation

Do This: Stick to the sizes called for by the Register Standardization Program of the National Warm Air Heating and Air Conditioning Association. These sizes are being mass-produced in large volume in order to provide the best possible service in the face of unprecedented register demand and inadequate supply of both labor and steel. Production of other sizes must be sandwiched in as opportunity permits. Standard sizes are clearly indicated in our No. 46 Catalog. Ask your jobber or write us, if you do not have one.

The standardized sizes for the finest of all Baseboard Registers, the H&C No. 130, are as follows:

No. 132¼—10 x 8 for 8″ Pipe
No. 132¼—12 x 8 for 9″ Pipe
No. 133¼—12 x 9 for 10″ Pipe
No. 135⅞—13 x 11 for 12″ Pipe

H&C

HART & COOLEY MANUFACTURING CO.
World's Largest Manufacturers of Registers, Grilles, Furnace Accessories
HOLLAND • MICHIGAN

In Canada: Hart & Cooley Mfg. Co., Fort Erie, N. Ontario

New Literature

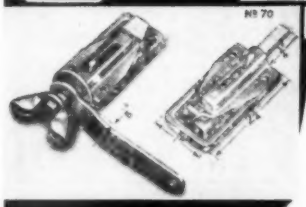
For your convenience in obtaining information regarding these items, use the coupon on page 130.

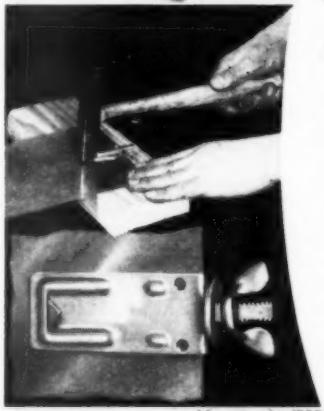
7—"Tin and Its Uses"

The English publication "Tin and Its Uses," which is printed by the Tin Research Institute, has announced the development of a corrosion-resistant coating of tin-zinc alloy, produced by electroplating. A series of full color illustrations show the effects of corrosion tests on steel sheets coated with the new tin-zinc alloy as contrasted with sheets coated with tin, zinc and cadmium. A very thin coating of the new alloy does the work of a greater thickness of the other metals. One use of the new alloy has been as a finish for the steel chassis of radio sets and it is said to be "outstandingly resistant to tropical conditions." It is also said to be highly resistant to marine conditions.

Other features of the issue are an article on the scarcity of tin and one on the details of a method of tinning cast iron which gives a smooth, even coating of considerable adhesion. Another description concerns a process for producing an oxide on the surface of tinplate that is to be used for food containers. This process prevents rust and the black staining caused by some foods.—*Battelle Memorial Institute, 505 King Ave., Columbus, Ohio.*

H&C KWIK-WAY DAMPER REGULATOR SETS





Most Easily and Quickly Attachable Sets on the Market

STURDY • RATTLE-PROOF
NO ANVIL REQUIRED
IDENTICAL 5/16″ RETRACTABLE BEARINGS

Simply slip the bearing over the edge of the damper at the bearing line. Lay on any firm surface and strike one solid hammer blow. The prong pierces the damper and is clinched securely in place by the heavily ribbed underside construction of bearing. Fastening is permanently solid, rattle-proof. Identical bearings with retractable bolt make easier installation of regular or splitter dampers in round or square ducts.

LIST PRICES

No. 70 Set	$0.30
No. 77 Set	0.40

FOR LARGE DAMPERS

No. 50⅜ Set	$0.60
No. 80⅜ Set	0.60

See your jobber or write for literature.

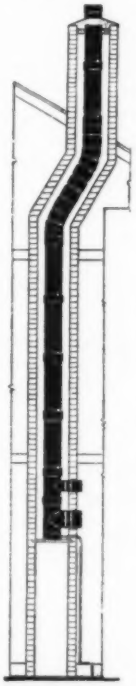
HART & COOLEY MANUFACTURING CO.
HOLLAND MICHIGAN

IS THIS NECESSARY?

VITROLINER BREECHING PIPE

ELIMINATES THE EXPENSE AND BOTHER OF FREQUENT REPLACEMENT

VITROLINER is a new breeching pipe for connecting heating plant to chimney. VITROLINER BREECHING PIPE will give many years of trouble-free service. A complete line of fittings makes any hookup possible and can be easily and quickly installed. VITROLINER eliminates the fire hazard of corroded pipe. VITROLINER is made of heavy gauge steel completely coated inside and outside with porcelain to prevent corrosion. VITROLINER'S porcelain finish is attractive and adds to the beauty of any room.



SPECIAL FEATURES: The Telescope section is adjustable in length and is used to fill in any odd length not accommodated by standard lengths. The Vitroliner damper section has a cleanout hole covered with a sliding sleeve.

VITROLINER CHIMNEY LINER

VITROLINER is an acid resisting chimney lining which can be installed in existing chimneys, easily and quickly. VITROLINER prevents chimney deterioration caused by acids in the flue gases. VITROLINER will catch the acid condensate and drain it away with no harm to the brickwork.

VITROLINER has been used for the past 16 years and is proven through a long field record.

VITROLINER chimney lining is heavy gauge steel, double coated inside and outside with acid resisting porcelain fused into the steel at 1575° F.

VITROLINER will correct DEFECTIVE LINING, SMOKE BACK, LEAKY BRICK JOINTS, and POOR DRAFT.

Write for further details and circular.

CONDENSATION ENGINEERING CORPORATION

122 So. Michigan Ave., Chicago 3, Ill.

THE NEW SNO-BREZE WINDOW TYPE COOLER

that requires no fill-in material or outside support

At last! An evaporative fan type cooler with adjustable metal fill-ins, that instantly fits any window from 24" to 34½" wide. Eliminates all installation problems and looks as handsome as a piece of modern furniture! Note these important features that make for quick sales:

DYNAMIC NEW DESIGN,
only fresh air can enter new inset orifice.

POWER AND WATER SWITCHES,
placed on front of cooler, controlled from inside of room.

ADJUSTABLE DIRECTIONAL LOUVRES

MOTOR, 1/25 h.p., requires oiling only once during the season.

CABINET, 22-gauge, rust-resistant, welded steel, 24" x 24" x 16".

"SNO FLUF" PAD of pure, odorless aspen.

FAN, big efficient 16".

GUARANTEED,
material and workmanship for 1 year.

*pat. pending

DELUXE MODEL
R-16 D 1500 CFM

Palmer Manufacturing Corp.
Phoenix, Arizona

Premier
Model "G"
Master
Cast Iron
Furnace
TIM SNIPS Says . . .
"Every Day in Every Way
PREMIER Shipments
Are Getting Bigger!"
PREMIER
Yes — the output of Premier products has been stepped-up and every day a larger volume of Premier equipment is being delivered to Independent Furnace Dealers. It's true that some models are still scarce, but that's because of the increasing demand, aggravated by shortages of some materials and parts.
Right now orders for our Master Furnace, shown above, are being shipped promptly and additional models will be added to the available list regularly.
PREMIER FURNACE COMPANY
DOWAGIAC, MICHIGAN
PREMIER
The Year 'Round Line
Blowers
Forced Air Units
Steel Furnaces
Humidifiers

New Literature

For your convenience in obtaining information regarding these items, use the coupon on page 130.

8—Recreation Room

A booklet titled "Ideas for Playroom Planning" is being offered by the Heil Company as an aid to the home owners in planning a basement recreation room. It contains illustrations of actual recreation rooms that have been made possible by the use of automatic heat.

A feature of the booklet is its cross-ruled layout sheet accompanied by a set of scale cut-outs representing nearly all equipment that would be in a basement. Price 10c.—*The Heil Co., 3000 W. Montana St., Milwaukee 1, Wis.*

9—"Technical Advisor"

As the latest move in its campaign of service to the metal-working industries Reynolds Metals has instituted a new monthly technical paper called the "Technical Advisor." Avowed aim of the paper is to publicize the latest recommendations of methods of using aluminum mill products most effectively. The first issue contains a technical description of the two main processes in the manufacture of aluminum as well as an article on the welding of aluminum. A question-and-answer section is also featured. The magazine is free.—*Reynolds Metals Co., 2500 So. Third St., Louisville 1, Ky.*

10—Aluminum Awnings

Koolvent aluminum awnings are described and illustrated in a new booklet released recently and titled "The Air-Conditioned Awning." It explains the durability of the Koolvent awning and features full-color photos of actual installations which show the various colors in which the awnings may be obtained.—*Kool-Vent Metal Awning Corp., Keystone Building, Pittsburgh, Pa.*

11—Electric Motors

The complete line of Emerson-Electric Capacitor-start motors is pictured and described in a new pamphlet offered by Emerson. The bulletin gives details of construction of this type of motor as well as complete dimensions, diagrams and rating standards according to the new NEMA fractional horsepower motor standards.—*The Emerson Electric Co., 1824 Washington Ave., St. Louis, Mo.*

12—Thermocouples

Bulletin No. 4181 covering their line of Alnor Thermocouples, protection tubes and accessories, has been published by the Illinois Testing Laboratories. In addition to a listing of all pyrometer accessories it also covers portable pyrometers and contains a useful temperature conversion table.—*Illinois Testing Laboratories, Inc., 420 N. LaSalle St., Chicago 10, Ill.*

13—Nickel Alloy

A colorful folder describing the benefits of "Ni-Resist," a nickel alloy material used for the tops of ranges in large food establishments, has been issued by the International Nickel Company. Several points are emphasized such as increased safety, range efficiency, lowering of replacement costs and improved appearance over cast iron tops.—*The International Nickel Co., 67 Wall St., New York 5, N. Y.*

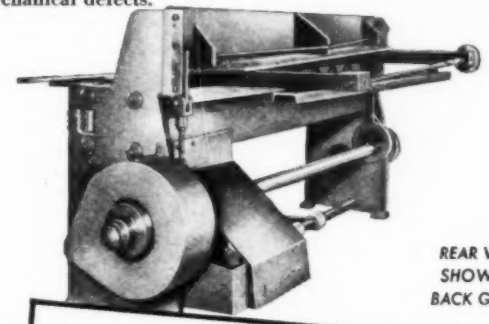
Why Wait?

PARKER

POWER SQUARING SHEARS

...are now ready for delivery!

PARKER 14-gauge, 72" Power Squaring Shears are rolling off the line and can be delivered, ready for installation, within 30 days. Parker Shears are of all-steel welded construction, component parts being made of extra heavy steel plates formed into box type rigid members of maximum strength and minimum deflection. Steel parts are normalized after welding, relieving all stresses. The stiffness or rigidity of steel is twice that of cast iron and the breaking point is three times that of cast iron. Only 47" high, Parker Shears have a low center of gravity for smooth, vibrationless power operation. They will cut drawn or folded parts within 1½" of the shoulder, thus deep-drawn objects (sinks, basins, cowlings, etc.) may be trimmed closer. Four-way, high carbon tool steel blades last longer and reduce grinding time. Extra long gibways insure long blade life and straight-line shearing. Parker Shears are sold with a warranty against material and mechanical defects.



REAR VIEW SHOWING BACK GAUGE

SPECIFICATIONS

Capacity gauge 14	Front gauge range ..... 38"
Cutting length (Max.) .. 73"	Strokes per min. 85
Blade length ..... 75"	Motor (3 phase) HP 2
Upper blade slope ..... 3/8"	Height ..... 47"
Back gauge range ..... 18"	Weight (Approx. lbs.) 2750

Write or wire for complete information. Territories for distributors available on request.

PARKER
MANUFACTURING COMPANY
2200 Colorado Avenue
Santa Monica 4, California

COMFORT *for* "Those Difficult Corners"

No. 256 4-WAY FLOW AIR-CONDITIONING REGISTERS

You can master any heating situation no matter how difficult—with U.S. No. 256 Air-Conditioning Registers. Multiple Valves provide an even flow of air over the entire grille area—proper up or down deflection is easily set by the knob at the right. Left or right directional flow, as required by room conditions, is quickly adjusted by the handy grille bar setting wrench. In precision construction, reasonable price, harmonizing finishes, and heating performance, No. 256 Registers will bring enthusiastic praise from your most exacting customers.

Catalog No. 47 is just off the press—send for your copy.

UNITED STATES REGISTER CO.
BATTLE CREEK, MICHIGAN
MINNEAPOLIS • KANSAS CITY • ALBANY

New Literature

For your convenience in obtaining copies of New Literature use the coupon on this page.

2-47

American Artisan,
6 N. Michigan Ave.
Chicago 2, Ill.

Please ask the manufacturer to send me more information about the equipment mentioned under the following reference numbers in "Equipment Developments" and "New Literature." (Circle numbers in which you are interested):

1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18
19	20							

1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	

Name.....

Company.....

Address.....

Are you manufacturer ☐ Jobber ☐ Dealer ☐

14—Exhaust Fans

A 16-page catalog of Emerson exhaust fans for "Business and Industry" has been compiled by Emerson Electric. It gives data on the proper places to use exhaust fans to best advantage and tells how to determine correct sizes and methods of installation. Also included are details of design, construction, performance and specifications for direct-drive and belt-drive exhaust fans.—*The Emerson Electric Co., 1824 Washington Ave., St. Louis, Mo.*

15—Dust Collectors

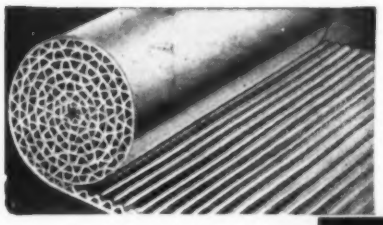
Two new technical bulletins concerning their "Hydro-Whirl" Dust Collectors and Spray Booths have been compiled by Peters-Dalton. Colorfully illustrated the books offer specifications of the products and also suggestions for their use in industrial processing.—*Peters-Dalton Inc., 17900 Ryan Road, Detroit 12, Mich.*

16—Plastic Covers

A catalog describing their line of transparent plastic display envelopes and protective covers has been issued by the Meier Company of New York. It gives complete information on all the various devices some of which find use as covers for blueprints, drawings and charts.—*Catalog 46, Joshua Meier Co., 36 East 10th St., New York 3, N. Y.*

17—Toggle Clamps

The makers of De-Sta-Co Toggle Clamps have issued a 1947 catalog giving detailed specifications of their entire line of quick-acting clamps. Among their products are clamps for production lines, machining and assembly, and a section of the catalog is also devoted to arbor spacers and other miscellaneous parts.—*Catalog 47, Detroit Stamping Co., Dept. K, 341 Midland Ave., Detroit 3, Mich.*

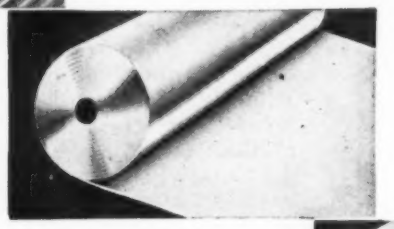


Quality Asbestos Products

Experience of more than 50 years in developing and manufacturing Asbestos Products places Sall Mountain Company in a leading position for all kinds of asbestos insulation and fireproofing.

SAL-MO ASBESTOS AIRCELL PAPER

For insulating hot air pipe, gas ovens, range boilers and other surfaces exposed to heat. Protects surfaces from rust and corrosion.



SAL-MO ASBESTOS PAPERS

Made in smooth, strong white sheets from the best grades of selected asbestos fibre. Specially processed to insure efficient insulation. In all standard weights and widths.

SAL-MO No. 77 ASBESTOS DUCTBOARD

An Asbestos Product for constructing ducts in warm air heating, ventilating and air conditioning systems. Made of solid Asbestos. Light in weight; fireproof and moistureproof. Easily handled and applied. 33x48 sheets.

SALL MOUNTAIN COMPANY Asbestos UTILITY SERVICE ECONOMY

TANK JACKETS
PIPE COVERINGS
CEMENT AND
OTHER ASBESTOS
PRODUCTS

SAL-MO ASBESTOS MILLBOARD

Fire and verminproof. Sal-Mo Asbestos Millboard is not affected by age or dampness. For insulating stoves, ovens, electrical and heating appliances, protecting walls from heating apparatus. Standard size sheets; also cut to size.

SALL MOUNTAIN COMPANY · ANDOVER 2414 · 176 W. ADAMS ST., CHICAGO 3, ILL.

Over a third of a Century FAITHFUL PERFORMANCE

Listed by Underwriters' Laboratories, Inc. To Burn No. 3 Oil (Diesel) or lighter

KRESKY offers future profits to DEALERS

A pioneer among oil burners Kresky finds such an unprecedented demand today that we are forced to limit shipments to old established dealers. Nevertheless new franchises are being granted now to farsighted dealers who see in Kresky's present oversold condition the promise of future opportunity. ★ The versatile Kresky line is a year round money maker due to its wide applications — heating, cooking and industrial. It includes Conversion Burners, Floor Furnaces, Forced Air Units, Range Burners and Water Heaters. *Write for Kresky Dealer Plan.*

Kresky Oil BURNERS

KRESKY MANUFACTURING COMPANY

Pioneers in Oil Burning Equipment Since 1910

PETALUMA, CALIFORNIA

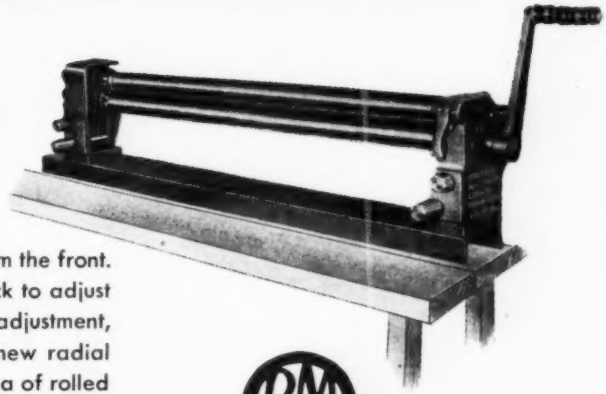
HEATING • COOKING • HOT WATER • INDUSTRIAL

Riverside SLIP ROLL FORMING MACHINE

ALL ADJUSTMENTS MADE FROM THE FRONT

RADIAL ADJUSTMENT MINIMIZES FLATTENED AREA

MOUNTED ON A RIGID CHANNEL BASE



This machine is sturdily made of heavy cast iron. The forming rolls are of high grade steel, ground and polished, and the entire machine is mounted on a rigid channel base.

All adjustments for gauge of metal and curvature of the sheet are made from the front. There is no need to reach around in back to adjust rolls. In addition to this distinctive front adjustment, another feature of this machine is the new radial adjustment which minimizes flattened area of rolled sheets regardless of curvature. Furnished in both 37" and 31" roll lengths.

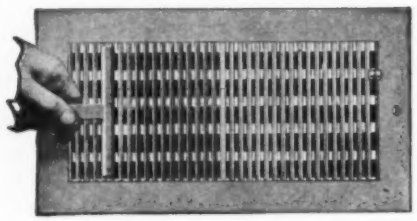
RIVERSIDE MACHINERY COMPANY

"NOW AT OUR NEW LOCATION"

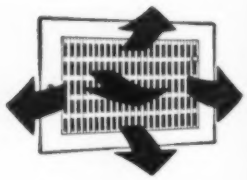
SHAKOPEE MINNESOTA

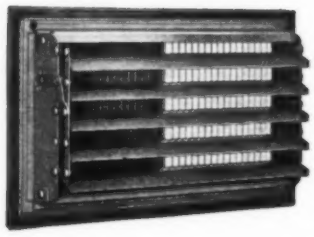
Independent

WROUGHT STEEL REGISTERS
PROVIDE
4 WAY ADJUSTABLE AIR FLOW



Design No. 238





Right . . . left . . . up . . . down . . . air flow at any angle desired, in addition to straight outward . . . plus the durable construction which has distinguished Independent products for more than 46 years . . .

These are the reasons for the popularity of this No. 238 Independent Wall Register. Vertical grille bars are manufactured at an angle of 30 degrees, one-half to the right and one-half to the left. They may be bent to direct air flow at any other right or left angle or straight outward. Horizontal multiple valves located at the back of register can be set to deflect air flow up, down, or straight outward. Available in standard sizes 8″x6″ to 30″x8″.

MEMBER
NATIONAL WARM AIR HEATING
INDOOR COMFORT
AND AIR CONDITIONING ASSOCIATION

Send for Catalog 41-AC

Always Leading—Always Progressing

THE INDEPENDENT
REGISTER CO.
3747 E. 93rd STREET · CLEVELAND, OHIO

With the Manufacturers

Appointment of **Frederick C. Brandt** as sales manager of the air conditioning controls division for the Minneapolis-Honeywell Regulator Company in the southwestern region has been revealed by **John E. Haines,** vice president. Mr. Brandt will make his headquarters at the Houston office at 1309 Capitol Ave., Houston, Tex.

The Lincoln Electric Company of Cleveland, Ohio has made public a number of personnel changes and office relocations.

W. R. Persons has been made sales manager of the company, being promoted from a special planning assignment. Several new welding engineers have been assigned to the field offices of the company: **Marvin Anderson,** Moline, Illinois; **Albert Bavaria,** Philadelphia, Pa.; **Richard Freundlich,** Cleveland, Ohio; **Paul Holden,** Franklin, Pa.; **Richard Nelson,** Syracuse, New York; **Richard K. Reynolds,** Detroit, Mich. and **John Williams,** Syracuse, New York.

Also announced were the new locations of the following offices: San Francisco, 1302 Stanford Ave., Emeryville, Calif.; Los Angeles, 1500 Calzona St.; Birmingham, 113 North Ninth St., Birmingham, Ala.

A. W. Conley, previously executive vice president and general manager, has been elected president of the Coroaire Heater Corporation, Cleveland, Ohio. Mr. Conley succeeds **E. R. Smead,** who has become chairman of the board of directors.

Coroaire has also announced the appointment of **W. L. Thompson** as engineer of the company.

Charles A. Cooper has been made assistant general manager of the Timken Silent Automatic Division of the Timken-Detroit Axle Company, it was recently revealed by **T. A. Crawford,** general manager.

Mr. Cooper entered the oil burner industry in 1928, when he first became associated with Timken. He was made assistant secretary and assistant treasurer in 1937, which capacity he has served in until this time.

The appointment of **J. E. Ledger** as general manager of the J. L. Gillen Company, Dowagiac, Michigan, manufacturers of automatic oil burning water heaters and furnaces, was announced recently by **Harold R. Coon,** president of the firm. Mr. Ledger was formerly sales manager of the Universal Engineering Company of San Diego, California.

In view of the fact that its production is no longer limited to coal stokers but now embraces gas conversion burners and gas furnaces and soon will also number oil burners and furnaces the Stok-A-Fire Company of St. Louis, Mo., has changed its name to the Automatic Firing Corporation. The company feels that the new name will be more in keeping with its attempt to serve the public by offering heating equipment utilizing all types of fuels rather than just one fuel.

In an extensive program of production facility expansion the Aldrich Company, Wyoming, Illinois, has announced the completion of a plant for electric motor and transformer manufacture.

Glen Hair and **R. D. Barber, Sr.** will be in charge of this new unit and all equipment was at hand for placing this division into operation at the earliest possible moment.

POPULAR!

because it's...

portable—
practical—
profitable

Users like Wells Metal Cutting Band Saws for a number of very good reasons. In the first place these saws, though rugged in design and construction, are compact, self-contained, and readily portable. You can move them to a point most convenient to the work. They take up little floor space. Wells saws are also 100% practical—simple to operate, yet capable of handling a wide variety of work without special fixtures. A third important reason for widespread popularity, is that thousands of users have found them highly profitable. For a small investment, you get a versatile tool that can help you in many ways . . . in breaking bottlenecks . . . in getting work out in less time. See your local Wells distributor, or write for details.

Specifications:

CAPACITY: Rectangular . . . . 8" x 16"
(Special Guides) . . . . . 5" x 24"
ROUNDS: . . . . . 8" Diameter
MOTOR: . . . . . ½ H.P., A.C. or D.C.
SPEEDS: Selective 60, 90, 130 feet per minute
WEIGHT: . . . . Approximately 665 pounds

Wells Saws

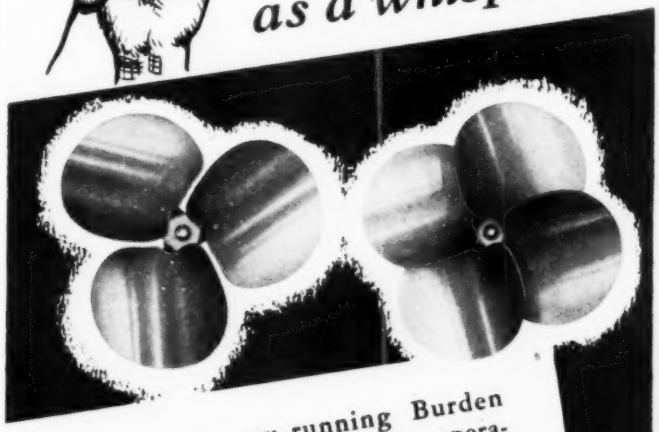
Wells

Products by Wells are Practical

METAL CUTTING BAND SAWS

WELLS MANUFACTURING CORPORATION
1818 WILSON AVE., THREE RIVERS, MICHIGAN

Quiet as a whisper!



The smooth, easy-running Burden Blades offer exceptionally quiet operation, regardless of the use to which you put them.

All Burden Blades are tested for dynamic and static balance by new and improved exclusive Burden equipment. Maximum volume of air flow is assured at all times.

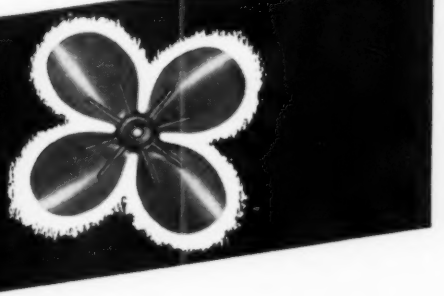
burden

full and semi-pressure propellers are made of finished aluminum with plated steel spiders. Free air blades come in aluminum and in all steel plated for attractiveness and rust-resistance.

Immediate deliveries can now be made on the following models:

Semi-Pressure Type—8 Thru 30"
Full Pressure Type — 8 Thru 24"
Free Air Blades — 5½ Thru 10"

THE NEW BURDEN ATTIC FANS ARE NOW IN PRODUCTION FOR DELIVERIES STARTING MARCH



burden COMPANY

1000 N. ORANGE DRIVE • LOS ANGELES 46, CALIF.

Write Today for Literature

DON'T JUST DRILL IT...
SKILDRILL IT!
There are all kinds of ways to drill a hole... but only one way to do it better, faster, easier... that's with a SKILDRILL. Ask your Distributor today about a demonstration.
SKILSAW, INC.
5033 Elston Ave., Chicago 30, Illinois
Factory Branches in Principal Cities
ELECTRIC PNEUMATIC
SKILTOOLS
SKILSAWS
SKILSANDERS
SKILSHEAR
SKILNIBBLER
SKILGRINDERS
SKILDRILLS

With the Manufacturers

Research Products Corporation of Madison, Wisconsin has announced the appointment of two new sales representatives in the Southern states. First of these is the Jeff A. Hedden Company of 3184 Roswell Road, Atlanta, Georgia — for Georgia, Alabama and Mississippi. The other new representative is the Equipment Sales Company of 1107 American Bldg., Richmond, Virginia—for Virginia, North Carolina, South Carolina and part of northeastern Tennessee.

Airtemp Division of Chrysler Corporation, Dayton, Ohio, has recently made two important changes in personnel. **E. W. Haefner,** formerly manager of the parts and service department, is now assistant general sales manager of the Division. **J. H. Winters** has been promoted to Eastern Divisional Manager with responsibility for the Boston, Syracuse, New York, Philadelphia and Washington regions.

It was recently announced by **A. L. Evans,** president of Skuttle Mfg. Company, that a new plant and office building had been purchased at 4099 Beaufait, Detroit 17, Michigan. The building (erected in 1939) provides 33,000 square feet of floor space, sufficient for Skuttle to consolidate its management and manufacturing operations.

The Bishop and Babcock Mfg. Co. of Cleveland, Ohio has announced a change in location of its New York office. The new address is 415 Lexington Ave., Room 503, New York 17, N. Y.

At a meeting of the board of directors of the International Heater Company, Utica, New York, **L. R. Taylor** was elected president and **Murray Wheeler** was elected vice president of the company.

Mr. Taylor, a former president of the National Warm Air Heating and Air Conditioning Association had been vice president and general manager prior to his election as president of the company.

A new point-of-sale control display panel has been introduced by Sampsel Time Control, Inc., Spring Valley, Ill. It consists of a standard Sampsel thermostat and Sampsel damper control mounted on a display board and wired for operation so that the prospect can see the control system in action. The boards are available to dealers at a low cost.

Theo Valjean has been appointed to the position of assistant service manager of Duo-Therm Division, Motor Wheel Corporation, Lansing, Mich. Mr. Valjean has been with Duo-Therm since 1937 and has been a field engineer since 1942.

Ralph B. Edwards is the new manager of the Southwestern Division of Wayne Home Equipment Co., of Fort Wayne, Ind., according to **B. G. Duer,** vice president in charge of sales. Mr. Edwards was formerly with Delco and Decatur Pump Company.

Opening of a new 20,000 sq. ft. plant has been announced by Steelware Mfg. Corporation of Hawthorne, California. **Ralph Simon,** president and general manager, disclosed that the factory (built at a cost of $100,000)will employ about 90 workers and will expand its line of products into metal needs for home construction.

Distribution of products is planned on a national scale as soon as representatives can be selected.

CRIMPER & BEADER

LOOK FOR PEXTO

it's the mark of

FINER MACHINERY

Wherever Sheet Metal is fabricated, in small shops or large, in America or in foreign lands, the chances are you will see the mark PEXTO.

It has signified the finest in machinery and tools for 162 years. It is an emblem of the trade . . . a guarantee of smooth operation, accurately made products, long profitable use.

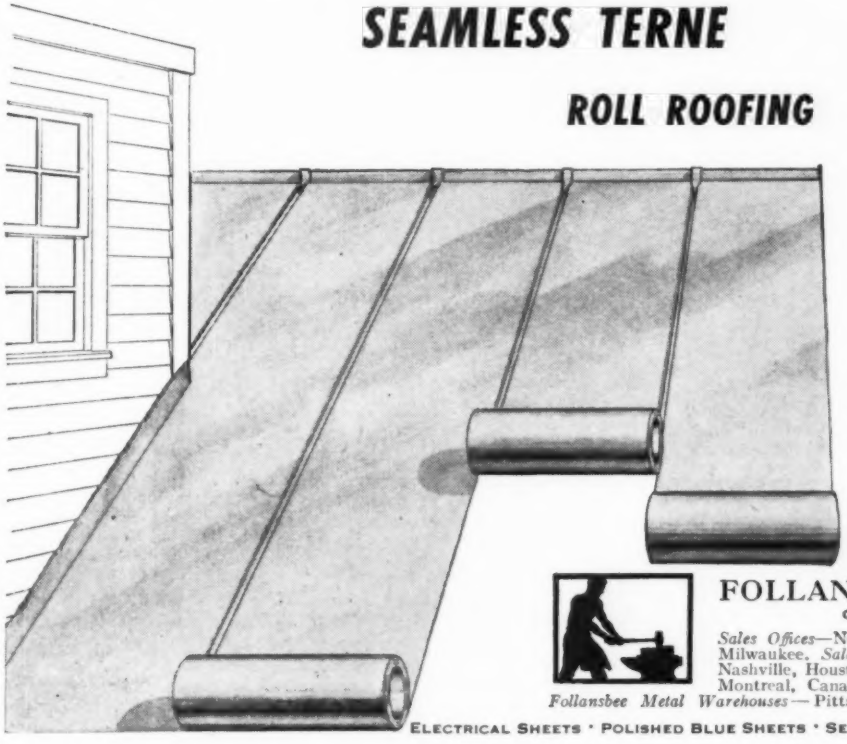
SQUARING SHEARS

THE PECK, STOW & WILCOX COMPANY *Since 1785* **SOUTHINGTON, CONNECTICUT, U.S.A.**

FOLLANSBEE

SEAMLESS TERNE

ROLL ROOFING



Roof repair and replacement contracts will show a satisfactory profit margin when you install Follansbee Seamless Terne Roll Roofing because you will be taking advantage of the time-saving, work-saving features.

It's true, of course, that we cannot furnish immediately all the material you require but your customers will always wait a little longer when they know you're supplying Follansbee Seamless Terne Roll Roofing.

If your distributor can't fill your orders today, please try again. We, at Follansbee, are sparing no efforts to fulfill your demands.

Stocked, As Available, by Leading Distributors

FOLLANSBEE STEEL CORPORATION

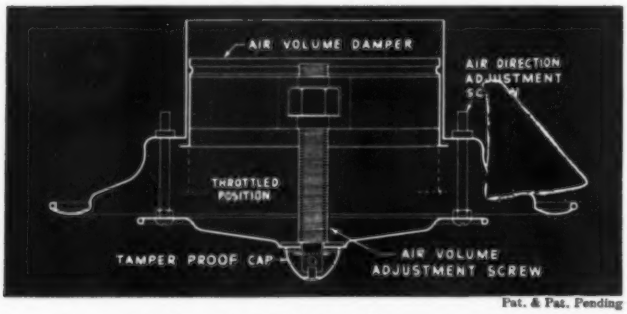
GENERAL OFFICES • PITTSBURGH 30, PA.

Sales Offices—New York, Philadelphia, Rochester, Cleveland, Detroit, Milwaukee. *Sales Agents*—Chicago, Indianapolis, St. Louis, Kansas City, Nashville, Houston, Los Angeles, San Francisco, Seattle; Toronto and Montreal, Canada. *Plants*—Follansbee, W. Va., and Toronto, Ohio. *Follansbee Metal Warehouses*—Pittsburgh, Pa., Rochester, N. Y., and Fairfield, Conn.

ELECTRICAL SHEETS • POLISHED BLUE SHEETS • SEAMLESS TERNE ROLL ROOFING • COLD ROLLED STRIP

How ADJUSTABLE air diffusers increase the efficiency of supply air distribution

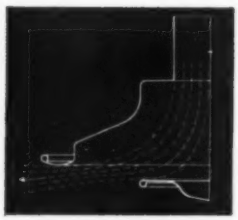
Kno-Draft Adjustable Diffusers offer all the advantages of draftless air diffusion plus fast system balancing and air pattern control



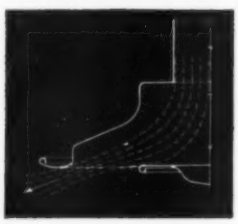
Pat. & Pat. Pending

Fast System Balancing: Volume damper regulates the air outlet aperture uniformly without affecting the outlet velocity or diffusion pattern.

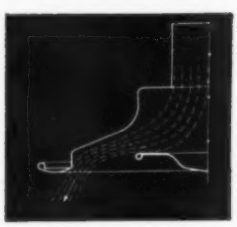
Positive Air Pattern Control: Air direction adjustment affords any angle of air discharge from vertical to horizontal needed to accommodate ceiling heights, individual or seasonal requirements. It can expel chilled air parallel to the ceiling or eject heated air downward to prevent stratification.



Specify Kno-Draft Adjustable Air Diffusers for better mixing control of room and supply air, more uniform temperatures throughout the occupied zone and noiseless, draftless air distribution.



Send for FREE handbook containing sketches, charts, dimension prints and instructive text that simplify the selection and installation of air diffusers. For your copy, please write Dept. J-12, on company letterhead.



W. B. CONNOR ENGINEERING CORP.

AIR DIFFUSION AIR PURIFICATION AIR RECOVERY

112 East 32nd Street — New York 16. N. Y.

IN CANADA: Douglas Engineering Co., Ltd., 1405 Bishop St., Montreal 25, P. Q.

NOW

THE AMAZING NEW

ARCTIC CIRCLE

The Nation's Finest

EVAPORATIVE COOLER

Arctic Circle Evaporative Coolers have *every desirable feature* . . . are definitely superior in appearance and performance!

- Constructed of heavy rust-resisting galvanized steel
- Completely die pressed and welded
- All steel treated for rust prevention
- Dynamically and statically balanced oversize blower. Larger than other coolers of comparable size
- Suspended blower, eliminating obstructions in bottom pan
- Equipped with quiet running Westinghouse motor
- Bronze water meter gives *even water distribution* to all pads
- Extra large non-sag pads
- Special chemically treated pads absorb water 30 times faster
- Finished in blue-grey hammered baked enamel inside and out

ARCTIC CIRCLE COOLER

INTERNATIONAL METAL PRODUCTS CO.

P. O. BOX 1712 • 500 S. 15th STREET
PHOENIX, ARIZONA

With the Manufacturers

Grand Rapids Die and Tool Co., Division of Expert Industries, Inc., Grand Rapids, Mich., has moved its Properaire Blower manufacturing facilities to a three-floor plant at 1519 Madison Ave., Grand Rapids.

Kurt J. Spencer, sales director, predicts a production of 1,000 units a day in 1947 in the new 100,000 sq. ft. factory. Properaire also makes filter package units, various types of exhaust blowers and a general blower assembly line for furnaces.

Air Filter Corporation, 2514 Lisbon Ave., Milwaukee, Wis., has announced the purchase of the Badger Corporation of the same city. All the filters that were marketed under the name "Badger" are being withdrawn and will be sold under the name of "Aircor." These include air, grease and welder filters.

The general sales offices of both the DoALL Company and the DoALL International Company, distributors of DoALL products and machine tools, have been moved into new quarters at Des Plaines, Illinois. The general offices in Minneapolis had been outgrown in the past two years and the new location at 254 North Laurel Avenue, Des Plaines will permit unification of all sales operations under one roof.

Joseph T. Ryerson & Son, Inc., steel distributors, have made a series of personnel changes in their various divisions. **Robert K. Larrabee** has been appointed machinery sales representative for the state of Michigan and a portion of Indiana and Ohio. **Park Sanderson** has been made manager of the Boston plant of the company, succeeding **Herbert C. Wills,** who is retiring after 34 years in the employ of Ryerson. Mr. Sanderson, himself, has been with the company for 20 years.

Park Sanderson

Albert J. Bauer is now sales representative for the Rocky Mountain States, with offices in Denver. **E. F. Wood,** who had been in charge of the Denver office has taken a new post as manager of the order department in Ryerson's Los Angeles plant.

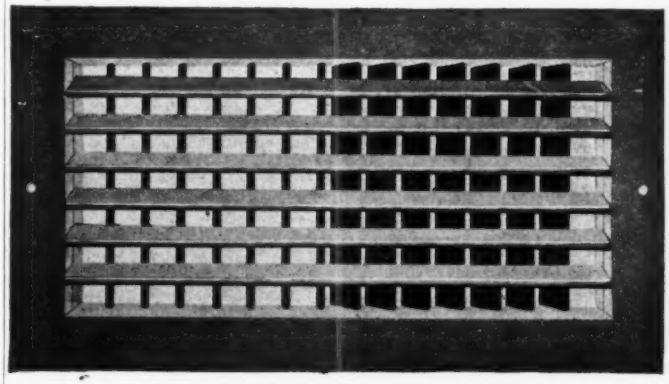
Appointment of Mr. Wood to the Los Angeles plant has just about completed the process of staffing the new plant.

Ryerson feels that its West Coast plant is a noteworthy step in the expansion of metal working facilities which has been taking place in California.

Albert J. Bauer

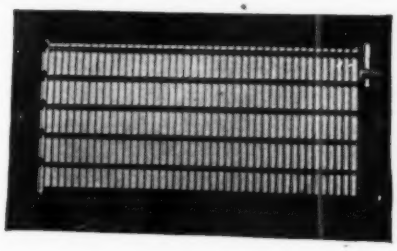
YOU CAN GET IT QUICKER FROM

STEWART



HIGH VELOCITY OUTLETS

Style DDH above is one of 8 variations of Stewart High Velocity Outlets that can be supplied with or without volume valves. Each bar is adjustable with a key (furnished). This unit is a heavy attractive Outlet made in all popular sizes, with matching fixed-bar down-deflecting return grille. *HIGH VELOCITY OUTLETS CAN BE SUPPLIED TO FIT CONTOUR OF CABINETS FOR ROOM COOLERS.*



MULTIPLE DAMPER REGISTERS

For Wall or Baseboard

Style 74—Register. This Register utilizes 1" multiple-dampers to control volume and vertical direction. Multiple dampers may be set so as to obtain up, straight, or down deflection, as well as complete shut-off. The face is the same as all others of the "70" line—permitting air reflection right or left by adjusting front blades with key furnished. Blades are ¼" center to center, and ¼" in depth.

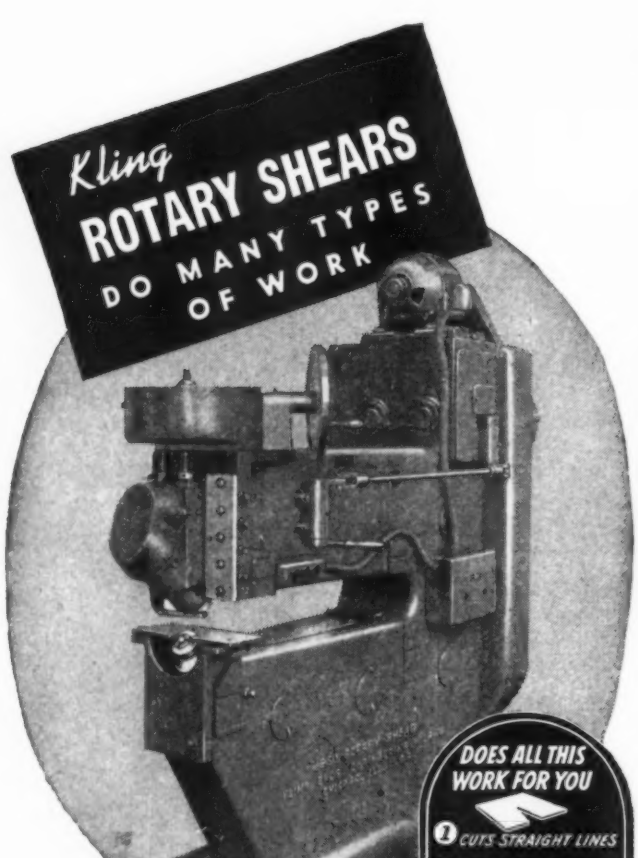
THE COMPLETE STEWART LINE

Flexibility to meet required specifications or conditions is the keynote of Stewart design. The Stewart line is competively priced and consists of a wide variety of popular types and sizes (not shown) of High Velocity Outlets, Wall and Baseboard Registers, Diffusing Grilles and Radiator Fronts that meet most air-conditioning and heating needs. Construction is substantial and of cold rolled steel protected with a priming coat. Special types and sizes can be made to your specifications.

PROMPT DELIVERIES ON STANDARD MODELS

For immediate quotation and literature—Ask for Bulletin A20

STEWART MANUFACTURING COMPANY
INCORPORATED
BLOOMFIELD, N. J.



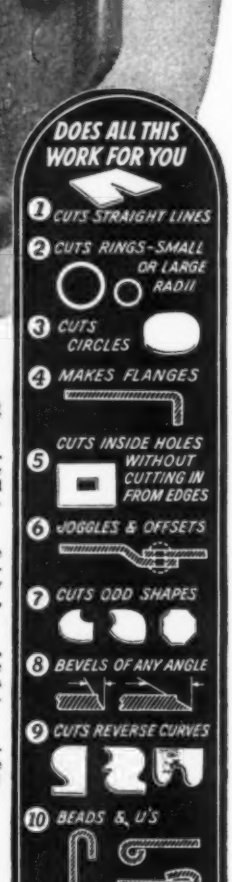
Yes, and With Hairline Precision

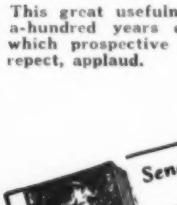
Rapid operation . . . Hairline Accuracy . . . the use of Kling Rotary Shears marks the latest development in cutting mild steel, and sheet metal, up to 1-inch with amazing savings in time, labor, and production costs.

For exacting projects (see illustration at the right), no single unit of metal-working equipment does so many different things so clearly and efficiently as does the Kling Rotary, pictured above.

In metal working plants, automotive, aviation, home appliance, and other industries, where work of this character is being done, — this machine is held in high regard for its versatility and economy of operation.

This great usefulness is the result of half-a-hundred years of engineering experience which prospective buyers, with reason and repect, applaud.


DOES ALL THIS WORK FOR YOU
1 CUTS STRAIGHT LINES
2 CUTS RINGS-SMALL OR LARGE RADII
3 CUTS CIRCLES
4 MAKES FLANGES
5 CUTS INSIDE HOLES WITHOUT CUTTING IN FROM EDGES
6 JOGGLES & OFFSETS
7 CUTS ODD SHAPES
8 BEVELS OF ANY ANGLE
9 CUTS REVERSE CURVES
10 BEADS & U'S
ALL WITH Hairline PRECISION



Send Today for Bulletin No. 245 which will give you specific facts, and specifications. No obligation involved. Users of heavy equipment of Kling Rotary Shears' class will receive a copy of this Bulletin promptly, on request.

KLING BROS. *Engineering Works*

1325-AA No. Kostner Ave., Chicago 51, Illinois

EXPORT DEPT. 1111 South Ferry Building, New York 4, N. Y.

With the Manufacturers

The Perfex Corporation, Milwaukee, has announced a number of promotions and changes in personnel. President **J. K. Luthe** was elected to the position of Chairman of the Board of Directors at the December meeting of the Board.

Mr. Luthe, formerly head of another controls manufacturer, founded the Perfex Corporation in 1934 and has been president since that year.

J. K. Luthe **P. F. Neess** **R. E. Toellner**

He was succeeded in the office of President by **Carroll E. Lewis,** executive vice president, who has been with the company for the last three years.

Two other appointments were made public at the same time, **Paul F. Neess** being made manager of Controls Sales Engineering, after previous positions as Chief Inspector and Chief Test Engineer; **Richard E. Toellner** was made a district manager, with offices in Detroit, to succeed **S. David Horner,** who left to enter his own business.

THE BARNES BETTER BILT GAS FLOOR FURNACE

The BARNES BETTER BILT GAS FLOOR FURNACE is enthusiastically endorsed by many home owners and builders because of the simple, quick method of installation. It's merely a matter of cutting a hole in the floor and wall furnace-size—then presto! it goes in easily and with a minimum of muss or fuss.

And there are other important, money saving reasons why the BARNES BETTER BILT GAS FLOOR FURNACE appeals to so many builders. There's the heavy 16 gauge heating element—the slotted Port Bunsen type burner—the 26 inch overall depth which requires no pit, no basement—the new, neatly designed non-vision grill—the fact that it meets the latest rigid requirements of A. G. A. standards for safety, economy and efficiency—and the ten year guarantee that insures your investment.

GAS Barnes Better Bilt Furnaces

For further information on the Barnes Better Bilt Gas Floor Furnace write today

BARNES HEATING & VENTILATING CO.

SALES OFFICE 330 E. FOURTH ST., LONG BEACH 2, CALIFORNIA

With the Manufacturers

A. H. Gardner, Jr., who formerly held the position of supervisor of dealer merchandising for one of the country's largest oil companies, has been appointed the new general manager of the Stokol Stoker Company of Indianapolis, Ind.

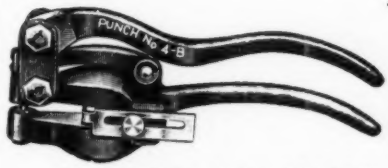
In connection with an expansion program of the company, one of Mr. Gardner's first acts as manager was to announce the relocation of the Stokol Company in new and larger quarters at Northwestern and 21st streets in Indianapolis.

A. H. Gardner, Jr.

In an expression of the viewpoint of the heating equipment manufacturer in regard to the recent Heating and Ventilating Exposition held at Cleveland, **C. S. Davis, Jr.,** vice-president and general manager of Norge-Heat, commented on the tremendous interest that the public evinced in heating and air conditioning. The fact that some people seem to think that prices should be lower than they are brought a statement that once material shortages ceased hampering production it was possible that price reduction might come.

Mr. Davis also said, "As a manufacturer, we do not view the eventual 'Buyers market' with alarm, but rather consider it a healthy condition for the nation as a whole.

WHITNEY
LEVER PUNCHES



NUMBER FOUR "B" PUNCH

This punch for sheet metal work has a capacity of ¼" through 16 gauge. Weight 3 lb. Length 8½". Depth of throat 2". Complete tool includes three punches and three dies of specified sizes with die adjusting key. A time-saver for your up-to-date shop.

And here's another handy tool for the modern shop — the No. 2 Punch. Length 23". Capacity 5/16" through ¼" iron, weight 14 lbs., depth of throat 1-11/16". Punches and dies 3/32" to ½" by 1/64".

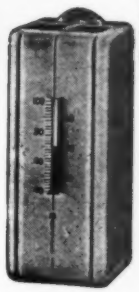
NUMBER TWO PUNCH

W. A. WHITNEY MFG. CO.
636 RACE ST. ROCKFORD, ILL.

MASTER
TEMPERATURE CONTROLS

B-22 Motor

The "Master" Mark on temperature controls means greater comfort . . . longer life . . . more efficient service for your customers . . . easier sales for you.



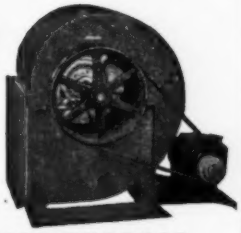
A-23 Plain Thermostat

For over a quarter of a century, "White" has been a distinguished name in the heating industry. Master Temperature Controls are famous for their greater comfort, more efficient service and longer life . . . factors which insure complete satisfaction for your customers and growing sales for you.

D-22 A Regulator Switch

WHITE MANUFACTURING COMPANY
2368 University Avenue • St. Paul, Minnesota

YOUR BLOWER Requirements
AVAILABLE AT
Schwitzer-Cummins Company



★ BLOWERS FOR EVERY PURPOSE
Double Inlet and Single Inlet

HY-DUTY Blowers, 9¾" to 25" • Top and Bottom Horizontal, and Top and Bottom Vertical Discharge • Top and Bottom Motor Mounting • Dual Units also available.

★ CENTER DISC WHEEL—Double Inlet, Double Width • Reinforced Center Disc • Designed for Modern Air Conditioning and Heating Applications • Sizes, 4½" to 50".

★ ENGINEERING DATA—Write for Catalogues showing complete Performance Data • Experienced Engineering Department available to help solve your Air Handling Problems.

VENTILATING DIVISION
SCHWITZER-CUMMINS COMPANY
1125 MASSACHUSETTS AVE. • INDIANAPOLIS 7, U. S. A.

BOOST PROFITS

Save VITAL FUEL

You can earn extra profits with a Grand Rapids Furnace Cleaner — and help save precious fuels, now more scarce than ever. Merchandising through your service department is the answer, for it not only enables you to sell new equipment while you clean but also keeps your customers' furnaces in the tip-top repair so essential to economical operation.

Built to give you dependable, efficient service for many years, the Grand Rapids Furnace Cleaner does a complete, thorough cleaning job, removing all dirt and dust from furnaces, boilers, chimneys, stokers, oil burners and heaters — even the entire basement if desired. It's sudden death to nasty "plug up" conditions. Write today for full information.

GRAND RAPIDS FURNACE CLEANER
MODEL OF The Doyle VAC-IT

DOYLE VACUUM CLEANER CO., 227 Stevens St., S. W., Grand Rapids 7, Mich.

Washington Letter—Kruckman

(Continued from Page 63)

the record they advise employers to refuse increases in wages based primarily on ability to pay. They suggest it is unwise to promise to increase prices if you raise wages; do not open your books to the unions; and let your wage guide be worker productivity. Government says the labor market will remain tight, that not more than 3,500,000 persons will be out of work late in September. The present figure is 2,000,000, which means full employment. The big issue they are watching in the Lewis fight against the Government and the coal operators is the application of injunctions.

A good way to fix the tax probabilities in your mind is to recall the average Government official, on the Hill or in the Hollow, expects the Federal Government will spend about $6,000,000,000 less the coming fiscal year, while the States and localities will spend more, the latter public spending just about equalizing the reduction by the Federal Government. There is much doubt whether the excise taxes will be abandoned. Taft and Knutson disagree. Taber, the vocal watchdog of the Treasury from New York, wants to cut off from $50,000,000 to $100,000,000 by firing the Government press agents and directors and personnel of the numerous "information sections." It is a curious bit of Government fantasy that at the same time the Members of the Congress are seriously discussing the need of establishing a well-organized and staffed public relations division on the Hill, in order that Congress may get a better and more intelligent outlet to the press, radio, and public. Most of the Members feel that many of their troubles spring from the fact that their publicity is badly handled.

If Your Controls are *Standard*

Everything is under control

STANDARD REMOTE CONTROL dedicates all of its experience, its abilities and its resources to assure you that *"If your controls are Standard, everything is under control."* Send us your blueprints and specifications for recommendations from our competent corps of engineers.

Standard REMOTE CONTROL VALVE COMPANY
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FURBLO BLOWERS

When you install Furblo blowers you assure your customers and yourself the finest performance for the maximum time. Furblo Blowers are equipped with quiet, dependable motors, Minneapolis-Honeywell controls, Dustop Filters, variable speed belts, and automatic overload cut-out. These features guarantee superior performance and consequent customer satisfaction.

FURBLO WINTER AIR CONDITIONERS

Round out your line now with a new Furblo product . . . the winter air conditioner. It's built to provide the utmost in warm, healthful heat with surprising economy of operation. Designed to harmonize with the most modern of basements and engineered for long dependable service you'll find it a quick and profitable seller. Please write for details.

FURBLO CO. HERMANSVILLE, MICH.

There is, of course, much discussion about HR 1, introduced by Congressman Knutson, chairman of the Appropriations Committee of the House, which would reduce personal taxes by 20%. This bill was filed the first day of the session. But no one here believes it will be made law. The most responsible opinion here is that around about May 15 a bill will be adopted reducing the personal taxes by 10%; and that the same bill may exempt reinvested earnings from taxation.

Surplus Material

WAA has $100,000,000 worth of steel surplus, but the smaller buyers will not get much opportunity to buy it. WAA wished to make it available through the warehouses through whom the smaller operators buy, but CPA refused to concede the method of allocation on the grounds that it was a system of "control" which had been outlawed. The CPA steel crowd has always blocked any method by which steel could be more readily available to the smaller user, even though some smaller plants have been obliged practically to close down for lack of the metal. The way to try to get some of this $100,000,000 worth now is to watch the surplus lists—almost a forlorn hope—and get some of it through the RFC priority people.

We are told here the local RFC offices actually often make strenuous efforts to get steel for the smaller plants. It is necessary to make the proper filing with the local RFC offices. Steel is still acutely short despite the optimistic word that filters out here and there. The auto industry says it has troubles, and the farm machinery people tell us they are in desperation for lack of certain types of sheet steel. There is a lack of scrap, and there is a lack of pig iron production. All this is reflected,

WHITNEY-JENSEN PRODUCTS
30 YEARS EXPERIENCE

HAND GROOVERS
■
10 SIZES
■
IMMEDIATE DELIVERY

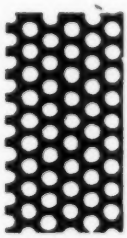
Write for CATALOG No. 16-46

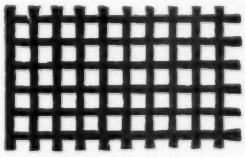
No. 5 JR. PUNCH

FURNISHED IN METAL OR PAPER BOX
WEIGHT—2¾ LBS.
CAPACITY—¼" THRU 16 GA.
7 PUNCHES & DIES
3/32", ⅛", 5/32", 3/16", 7/32", ¼", 9/32"
FURNISHED WITH EACH TOOL
THROAT DEPTH—2"

WHITNEY METAL TOOL COMPANY
91 FORBES ST. • ROCKFORD, ILL.

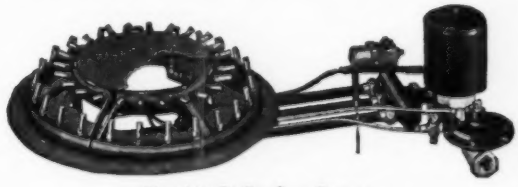
PERFORATED METALS
ARE USED
in many important and essential industries such as the processing of grain, food products, chemicals, metals, coal, petroleum, etc. We make all sizes and shapes of holes to meet the most exacting conditions.





the Harrington & King PERFORATING CO.
5649 Fillmore St., Chicago 44, Ill. 114 Liberty St., New York 6, N. Y.

BARBER BURNERS
For Better Conversion Jobs-



No. 324-B Barber Burner

Barber gas conversion burners automatically or manually controlled, are tailor-made in proper sizes and capacities to fit the heating requirements of all types and sizes of round or oblong furnaces and boilers. They operate with maximum economy and efficiency, both from the heating equipment and the gas fuel, no matter what type. Barber design is widely preferred for its superiority over many competitive, *experimental* burners, because of its basically better combustion principle. If the owner already has automatic controls, these usually can be used with a Barber installation. The burner is the *heart* of the appliance. See that *your* conversion jobs are equipped with genuine Barber burners.

Listed in A.G.A. Directory of Approved Appliances. Ask for catalog and prices on conversion burners, appliance burners, and pressure regulators.

THE BARBER GAS BURNER CO.
3704 Superior Avenue Cleveland 14, Ohio

BARBER *Automatic* JET GAS BURNERS
For Furnaces, Boilers and Appliances

HERE'S A TANK GAUGE THAT WILL ACCOMMODATE ALL TANKS

SAFETY IN MOVING PARTS

ADJUSTABLE FOR ALL TANKS

Check these features and you will see why *Bearlee* gauges are better:

1. **Because they are adjustable for all tanks from 18″ to 28″ and 30″ to 48″ in depth.**
2. **The combination threaded aluminum plug fits 1½″ and 2″ tank openings (no bushings to use).**
3. **Gas tight construction; Flint Glass Screwed in aluminum plug; easy to read from any direction in dark places.**
4. **One-piece adjustable indicator rod. No other gauge can offer this feature. When you set the BEARLEE gauge, you know you have a perfect reading for the contents of every tank.**
5. **Every adjustable and exclusive feature cannot be offered in any other gauge.**

All that's new and better you will find in the BEARLEE gauges, and you can have them at competitive prices.

Distributors and dealers write today for quotations.

BEARLEE PRODUCTS CO.
GREEN BAY — WISCONSIN

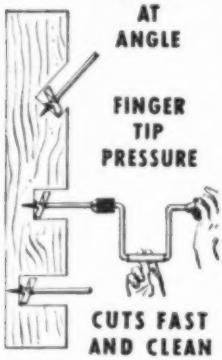
among other things, in a growing shortage of bolts, nuts, and pipe. They also warn us here that copper will remain very short through 1947, and well into 1948—perhaps longer. Domestic production will run between 85,000 and 100,000 tons, and it is predicted we will bring 400,000 tons from abroad at an increased cost of almost 30%. Also it is reported we must bring 200,000 tons of lead from abroad to meet our needs.

Nathan, of the recent CIO report, is working on a new report covering wages, prices, and profits for steel for CIO. The word also has been passed out here that shortages will continue indefinitely in fractional horsepower motors, rubber, paint and zinc, in addition to the other commodities mentioned. And they predict that you, who make finished steel products, building equipment, and building materials, will get higher prices almost immediately. Commerce Department predicts $15,000,000,000 in new construction this year. They forecast over-all construction of $22,000,000,000, and $7,000,000,000 in maintenance and repair work. Late in December OTC announced that a change in Schedule B exempts manufacturers from the "necessity of accepting HH or HHH rated orders from a dealer, even though the dealer may have been authorized to use such rating as a subcontractor. The modification affects those who sell temperature and combustion controls; floor, wall, and warm air furnaces and domestic oil burners."

The 800 Industry Advisory Boards of CPA are to be continued indefinitely. RFC which expires June 30, is to be continued. A tug of war has developed between the White House and the Hill over the trade agreements now under discussion in hearings in Washington. The Hill claims business people do not want the trade agreements negotiated with the 18 or more nations. Congressman Jenkins, Ohio, has intro-

FASTER, EASIER WOOD-BORING WITH THIS BRUNO AUGER BIT SET

Complete with 6 boring heads (5/8″ to 1-1/4″) in plastic case **$3.95**



Now you can bore many different size holes with one auger bit... exclusive Bruno Quick-Change Boring Heads cut tool costs in half! Boring heads of finest high carbon tool steel have special extra long cutting edge... require no forward pressure, turn easily in toughest woods. No flutes to bind or clog, bores all the way without cleaning.

ASK YOUR JOBBER OR WRITE DEPT. DE-1

Tool No.	Boring Heads	Cutting Diameters	Shank Length	Price
340-B*	6	5/8″ to 1-1/4″ by 8ths	8-1/16″	$3.95
350-B*	11	5/8″ to 1-1/4″ by 16ths	8-1/16″	5.95

*Square shanks for use in hand brace. Nos. 340, 350 straight shanks for use in bench drill, drill press, or portable drill.

BRUNO The BIG BUY in TOOLS

BRUNO TOOLS 9330 SANTA MONICA BLVD. BEVERLY HILLS, CALIFORNIA

IN POSITIONING

E-Z-ON

DAMPER REGULATORS

Save Installation Time with VISIBLE CENTERING

HERE'S the greatest little time-and-labor saver you ever saw — the E-Z-ON Damper Regulator. Visible centering makes it a "cinch" to position, and at a single hammer blow the E-Z-ON punches its own holes and rivets itself into rigid position on the damper. The E-Z-ON Divided Shaft provides a perfectly balanced, rattle-proof installation.

Altogether, you'll cut your assembly time at least ⅔ by using E-Z-ON Damper Regulators — a fact you can prove on your next job. Your choice of "Snap-Tite"or Standard types. At your Jobbers.

New Instructive Folder upon request.

STOCKED IN CANADA BY: THERMIDAIRE CORPORATION, LTD., LONG BEACH, TORONTO 14

M. A. GERETT CORP.
724 W. WINNEBAGO STREET, MILWAUKEE 5, WISCONSIN

duced a bill directing the President to cease the reciprocal trade agreement negotiations. He claims the agreements would cut the tariff on 800 commodities. To offset this Congressional move the Departments will hold hearings in Boston, Chicago, New Orleans, San Francisco, and Denver. Congress also insists that strategic stockpile procurements be made to the extent of not less than 25% in the United States. So far only three out of 65 materials have been bought in the United States. Foreign prices are lower because the standards of living permit production at lower costs. Export controls have been removed from sheet steel, black, ungalvanized, hot and cold rolled; and from iron and steel strip; products with under 4/10 of 1% carbon content still remain under control.

•

Purdue Technical Institute

(Continued from Page 66)

VI. Production Techniques in Supervision of Management

It was found after a year of operation that the diversification apparently was too great and the programs of study offered were limited to three, as follows:

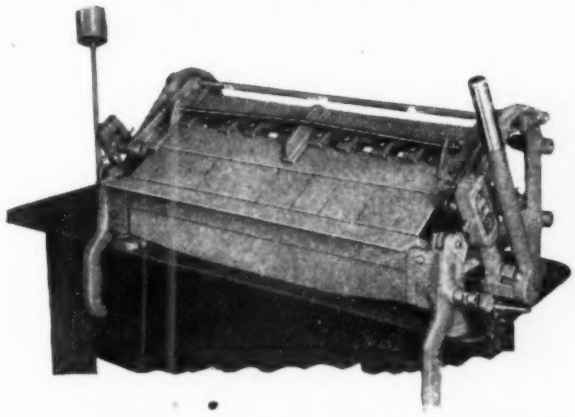
I. Drafting and Mechanical Technology

II. Electrical Technology

III. Supervision and Production Technology

At the present time six major field of specialization are open to students.

THE NEW STEWARD BOX and PAN BENDER
(BENCH TYPE)



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LENGTH 24"—CAPACITY 20 GA.

A SMALL BENCH TYPE BOX AND PAN BENDER SUITABLE FOR SHEET METAL SPECIALTY, RADIO, TOOL & DIE, MODEL & EXPERIMENTAL SHOPS AS WELL AS FOR LIGHT PRODUCTION.

—WRITE FOR DETAILS—

WARD MACHINERY COMPANY
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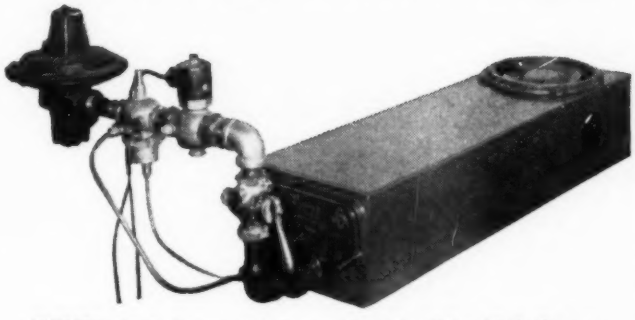
QUICK DELIVERY
OF THE FAMOUS
JOHN ZINK BURNER

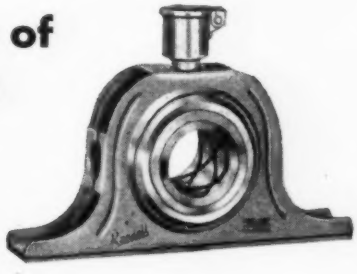


WE don't have to tell you that the John Zink Burner is one of the finest on the market, or that it's easy to sell and service, but we thought we'd better make it clear that we've built up quite a reputation for supplying them promptly. It's to your benefit to investigate our service and we'll be glad to accommodate you with the information you need if you'll just drop us a line.

Just remember there's a John Zink Burner for every heating and power need and it's easily and quickly available from Proie & Coogan.

PROIE & COOGAN HEATING CO.
WHOLESALE DISTRIBUTORS FOR INDOOR COMFORT SUPPLIES • ROOFING MATERIAL
6117 BROAD ST., PITTSBURGH 6, PA.
MOntrose 9300-01

Quiet and Efficient
for all types of air handling equipment



Randall
PILLOW BLOCKS

Randall's complete line includes precision-manufactured pillow blocks for every type of air handling equipment. About *four million* have been manufactured and used in this field. They are self-aligning, self-lubricating, easy to install and economical.

Catalog No. 47 gives complete information on the Randall line. Send for your copy today.

RANDALL GRAPHITE PRODUCTS CORPORATION
609 WEST LAKE STREET, CHICAGO 6, ILLINOIS, DEPT. 211

EASY TO READ FROM ANY DIRECTION ·

AT-A-GLANCE OIL GAUGE

PERFECT VISIBILITY!

EASY TO INSTALL!

NO ADJUST--MENTS

An exclusive patented feature is the double enclosure of plastic. Another exclusive patented feature is the calibration assembly that prevents oil from seeping into the calibration dome.

Easy to install in all basement tanks, even when partially full.

Made at the factory to fit all tank sizes, and according to individual specifications.

AT-A-GLANCE GAUGES ARE LISTED AS STANDARD BY UNDERWRITERS LABORATORIES

Write for complete details

KRUEGER SENTRY GAUGE CO.

GREEN BAY, WISCONSIN

I. Basic Industrial Technology
II. Drafting and Mechanical Technology
III. Electrical Technology
IV. Supervision and Production Technology
V. Chemical and Metallurgical Technology
VI. Building Construction Technology

The last one added, that of Building Construction Technology, is of primary interest to those who are preparing themselves for the field of air-conditioning, heating, and ventilating and refrigeration.

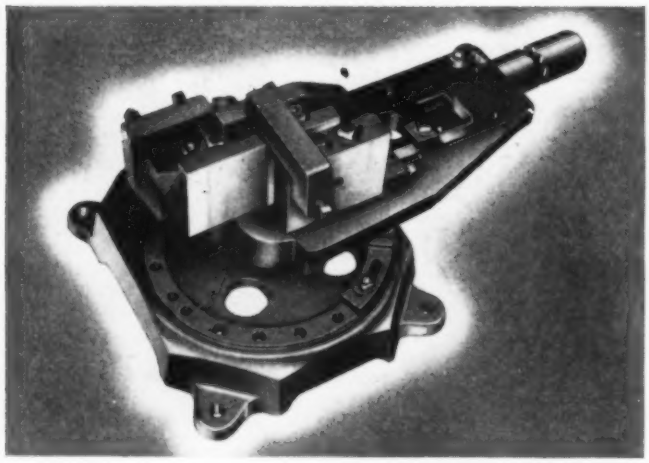
Building Construction Course

In the course of study in Building Construction Technology, students take the fundamental courses required of all, regardless of their major field of specialization. Likewise, the students enrolled in this program of study take those non-technical courses which are identified with each program. In the area of specialization, opportunity to vary the requirements within the framework of the total objective is given each student. This is done because of the variety of interest represented by those who enroll. Some wish to work in architects' offices and hence are given intensive instruction in drafting and design as it is related to the architect. Others are interested in working with construction or heating contractors and a different type of instruction is given. Still others are more interested in the service industries related to building construction, namely lumber and supply dealers and related technical workers. The courses from which a program may be selected to meet the requirements in this major area of specialization, include the following:

Plan Reading
Survey of Architectual Drawing
Frame Construction

Save Time and Money with

JK *Benders*



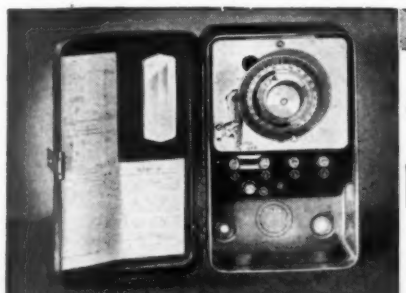
JK NO. 4 BAR BENDER

JK Benders are offered in a complete range of styles and sizes to meet the requirements for duplicating a large variety of shapes. They are easily set up for either hot or cold bending and there is practically no limit to the scope of work they can handle. If you have a bending problem you can solve it with a dependable JK Bender.

Send for Illustrated Folder and Price List

The JAMES KNIGHTS Company

SANDWICH, ILLINOIS



The "TOP" VALUE in TIME SWITCHES

Telechron MOTORED

Paragon 300 SERIES Now $10.75 List

OPERATING ADVANTAGES

1 Self-starting synchronous operation.

2 Complete self-oiling lubrication by patented capillary oiling system.

3 Years of continuous, uninterrupted operation.

4 Practically instantaneous self-starting at full rated load . . . and other advantages.

Has a ten year record of success. Widely known as a precision top-quality ON and OFF time switch. Ideal for timing stokers, oil burners, pumps, valves, refrigerators, attic fans, blowers, etc.

Includes a combination of the most advanced engineering features. Telechron motored.

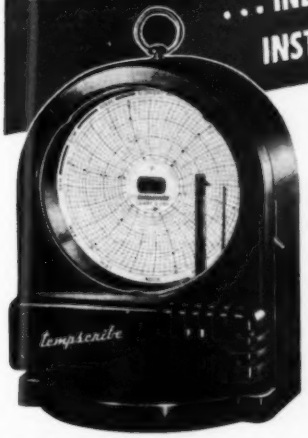
PARAGON ELECTRIC COMPANY
1608 Twelfth St., Two Rivers, Wisconsin

Paragon Two Rivers WISCONSIN
BUILDERS OF ELECTRICAL EQUIPMENT SINCE 1905

Building Materials
Masonry Construction
Specifications
Building Regulations
Mechanics of Materials
Elementary Structural Drafting
Wiring Standards and Underwriters Codes
Business Organization and Management
Sales and Advertising
Heat and Power
Heating, Ventilating and Air-Conditioning
Refrigeration
Industrial Materials
Industrial Processes
Principles and Theory of Operation of Combustion Instruments
Fundamental Theory of Temperature Measuring Instruments
Fundamental Theory of Automatic Control
Elementary Surveying and City Planning.

In planning a program of study for an individual student, the proper number of courses are selected, from the general list, to outline a plan consistent with the student's principal interest and possible future industrial activity. It is not the purpose of the Technical Institute program to prepare an individual for specific employment with a particular company. The Division of Technical Institutes of Purdue University must aim at a broader objective than specific employment in a particular place. On the other hand, it is quite possible for a student who knows precisely the type of training which would be most beneficial to him to enroll in only those courses that bear strategically upon his day by day activity.

The *tempscribe* RECORDER ... INDISPENSABLE for SALES, INSTALLATION and SERVICE



- SHOWS NEED FOR REPAIRS OR MODERNIZATION OF HEATING INSTALLATIONS!
- DEMONSTRATES THE HEATING COMFORTS THAT WILL RESULT FROM THE RECOMMENDED IMPROVEMENTS!
- SETTLES COMPLAINTS DIPLOMATICALLY AND KEEPS YOUR CUSTOMERS SATISFIED!

The TEMPSCRIBE Temperature Recorder makes round-the-clock records that show highest and lowest temperature for 24 hours, temperature extremes, and frequency of temperature fluctuations. Compact, self-contained; no electrical connection, requires no watching.

The TEMPSCRIBE can save your time and money on service calls—*and build your reputation for reliable, expert service.*

Ask your jobber about TEMPSCRIBE Recorders, or write for Bulletin 704.

BACHARACH INDUSTRIAL INSTRUMENT CO.
7000 BENNETT STREET, PITTSBURGH 8, PA.

Also Available!
MOTOR OPERATION RECORDER
... records on-and-off periods showing cycling frequency, length of running time, and percentage of heating capacity utilized.

WARM AIR PIPE and FITTINGS

There's a great difference in warm air pipe and fittings even though they might look alike. The difference lies in the integrity and capability of the manufacturer and those are mighty important points to consider. Are you able to get fittings that will consistently FIT the first time, be absolutely dependable, and be priced accordingly? If not, then you'll be doing yourself a favor by investigating our line. We make an honest effort to supply the finest in warm air pipe and fittings and an investigation on your part will convince you. Please write us today for more information.

RALPH SUPPLY INC.
Manufacturers of Warm Air Pipe and Fittings
P. O. Box 158 Wadsworth, Ohio

MAPLEWOOD HUSKY-LITE COMBINATION MACHINE

20 Gauge Capacity - Immediate Delivery

A HUSKY—LIGHT WEIGHT ALL-PURPOSE MACHINE, made from SPECIAL ALUMINUM ALLOY. Weight (less standard) 15 lbs. Equipped with steel cut gears. Steel rolls (2" long) are machined, hardened, ground and keyed to fit shafts.

A large interchangeable gauge (3¼" x 2½") and handles for either top or bottom shaft permits clockwise or counter-clockwise operation.

BURRING
TURNING
WIRING
SINGLE BEADING
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The ROTEX 18

17 Punches— 5/32" to 2"
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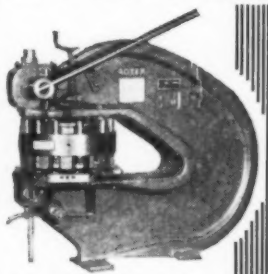
Shear Mounted for
Immediate Use.



DO it the Rotex way and save yourself time, trouble and money. Rotex quick change punch machines reduce punch changing time to a matter of seconds, and will provide you with a neater, cleaner and better job. Install one in your plant now and see for yourself how Rotex improves your overall efficiency. They're always ready for use, save time because punches and dies are mounted and pre-aligned in the machine, and have an unusually flexible capacity. Available with or without stand.
The Rotex Line is available for immediate delivery. Send us a postcard for literature.

ROTEX PUNCH CO.

4726 East 12th Street - Oakland, Cal.

Payroll Taxes—

(Continued from Page 70)

Misconduct must be connected with the work. All states (except West Virginia) require the misconduct to be connected with the work. This is clear if the misconduct is committed while the employee is at work. But it is not necessary that the employee actually be working at the time of the misconduct. If the act occurs outside the employment (either off the premises or outside of working hours), it is considered "connected with work" if:

1. The acts of the employee are such as to render him *unsuitable for his work.* Such misconduct is connected with his work even though committed outside of working hours. A truck driver who has his license revoked or suspended while off duty and using his own car is rendered unsuitable for his work. Similarly, a person in a position of trust and confidence may be rendered unsuitable for his work by reason of criminal conviction for acts occurring outside of work.

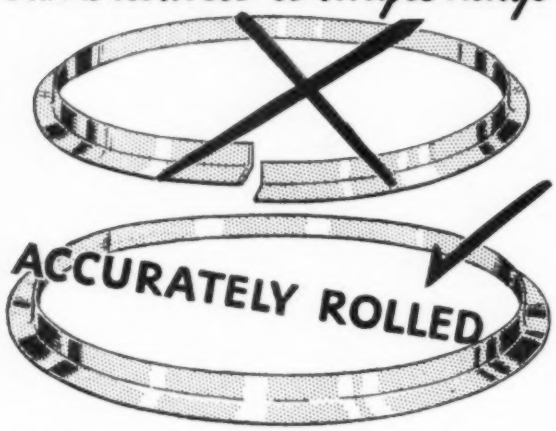
Proof of misconduct. The burden of proof is on the *employer* to show misconduct by a preponderance of the evidence. It is not sufficient to base the charge on vague rumors or suspicions.

Make the discharge on the *basis* of the misconduct, and tell the employee the reason. Even if he is guilty of misconduct, he won't be disqualified if he is discharged for some other reason.

Make the discharge within a reasonable *time* after the misconduct. If you wait too long, it will be assumed you have condoned the matter. Once condoned, that act will not be a proper basis for discharge for misconduct.

If a worker has been guilty of misconduct, do not notify the agency that he has been discharged for "unsatisfactory

Our Business is Angle Rings



✦ When it comes to rolling rings that join up naturally with uniform curvature thruout, we can be of genuine service to you.

✦ Saves time and effort when you back them up or fit them in on the job. Made to fit your needs—complete circles or any part thereof.

✦ Use them for reinforcing tanks—joining pipe or smoke stacks—installing wall fans—and many other uses.

✦ Write for list of sizes and discounts.

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REGISTERS and GRILLES
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Prompt attention to all inquiries

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work." *Always specify the type of misconduct,* such as "negligence," "carelessness," "inattention to duties," etc., and send along an explanation with the notice.

The mere fact that an employee's work is poor or that the quantity produced is small is no ground for *disqualification,* even though good business practice calls for discharge of an inefficient employee. However, if the inefficiency causing poor quality or low quantity is the result of negligence, indifference, etc., it will constitute disqualifying misconduct.

If the employee's work is slow or otherwise unsatisfactory, attempt, by *warning or instruction,* to bring the employee's work up to standard. Thereafter, if his work is still unsatisfactory, you have a proper basis for a discharge for misconduct if you can show that for a time, following such warning or instruction, the employee's work was satisfactory. This would be evidence that the poor work was not due to excusable causes such as inefficiency, inexperience, etc. In addition, the employee, upon being discharged, could not plead that he did not know that his work was considered unsatisfactory.

Whenever you contest a benefit claim on the ground of discharge for misconduct, submit as evidence the claimant's record if it shows previous indifference or disregard of the employer's interests. Even though the *last* act is not in itself completely disqualifying, the past bad record may swing the balance. Furthermore, if there is definitely disqualifying misconduct, the unsatisfactory past record will influence the administrative agency where it has discretion as to the *length* of the disqualification period. Also, the record may be the clinching argument in states which hold that the first instance of certain types of misconduct is not disqualifying.

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. . . to cash-in on the huge backlog of stoker sales! You increase your profits through faster sales, make fewer service calls by selling ECON-O-COL's complete line of precision-built, highest quality stokers. And a hard-hitting promotional program backs you up every step of the way! Details of our exclusive dealer franchise, now available in several areas, await your inquiry. Write or wire us today.

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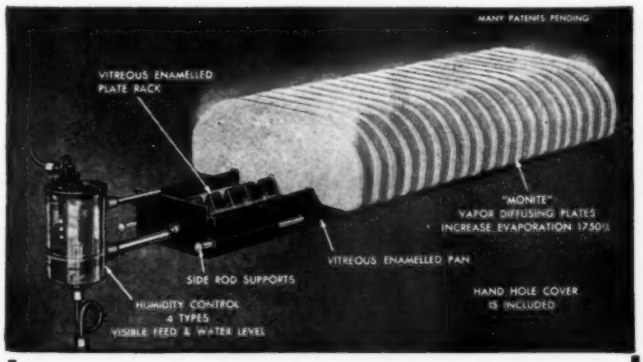
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▶ **Suggest Monmouth Flotrol Humidifiers on your jobs. Dealers everywhere are keen on this accessory. It means EXTRA sales easily made while you are selling, installing or servicing a warm air job. Proper humidity is an essential of every modern heating system. Only a well engineered, reliable device can provide it. Why waste your time servicing cheap, experimental humidifiers, and risk customer confidence?**

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Furnaces and Parts

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Performance is the yardstick for measuring the efficiency of any heating plant, and those that will operate year after year with little or no attention are the ones which will return you the most profit.

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MODERN METAL WORKING EQUIPMENT

THE BARTH MANUFACTURING CO., MILLDALE, CONN.

Expansion and Contraction

(Continued from Page 92)

take their own course, the material in which they are set up must be sufficiently ductile to withstand them or failure will result.

There are a number of other points as well that should always be kept in mind whenever expansion and contraction are being considered. The forces of expansion and contraction that are set up during heating and subsequent cooling extend in all directions. The amount of change in size for the same temperature change varies with the material but is proportional to the dimensions involved. However, whether or not the metal will expand and contract an equivalent distance in all directions, upon heating and cooling respectively, depends upon whether any forces are present that will resist the forces of expansion and contraction.

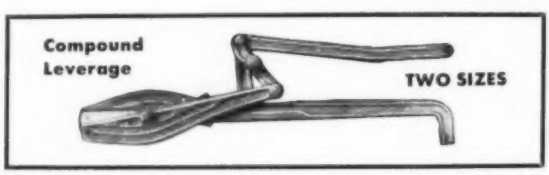
As the temperature of a piece of metal is raised, its strength decreases and its ductility increases. The amount of change in strength and ductility as well as in other mechanical properties, depends upon the material and the amount of the temperature change.

It has been pointed out that the amount of expansion resulting from heating depends upon the temperature change and the material. However, all materials do not expand the same amount for the same temperature change. Relative amounts of expansion and melting points of a few common metals are given in the accompanying table.

Heat Conductivity

All materials conduct heat to some extent, but the speed with which heat is transferred from one part of an object to

All-Alloy BLADES BOLTS LEVERS



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Cuts Without Springing the Jaws . . . On the Job—In the Shop

ALL-ALLOY No. 2 cuts up to ¼" steel plate.

ALL-ALLOY No. 1 cuts up to No. 11 gauge strip or sheet.

Your work will proceed faster and neater when you use Bremil All-Alloy Portable Shears on the job or in the shop.

LONG-LIFE BLADES—removable cutting blades are made from finest grade ALLOY (Shear Blade) Steel which has been properly heat treated, accurately machined and surface ground. Special blades available for cutting stainless steel.

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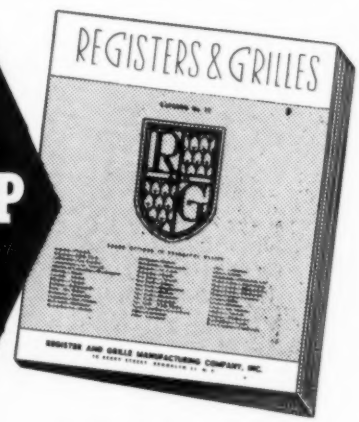

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R & G's new catalogue does *more* than list and describe. One of its many unusual features: individual performance of face and shutter action on each Grille and Register *is actually shown*.

For the first time—air capacities, air deflection and control on each type of unit are clearly explained and *illustrated*. This *one* catalogue lists R & G's complete line of all types of Registers and Grilles for air conditioning.

Write for Your Copy Today

REGISTER and GRILLE Manufacturing Company, Inc.

66 Berry Street Brooklyn 11, New York

another part varies greatly with different materials. When the edge of a piece of metal is heated, some of the heat immediately begins to flow back into the mass of metal. The longer it takes for this heat to flow back, the faster the temperature of the edge is raised because more heat remains near the edge. If it were not for heat conductivity, only that part of the edge that is in the direct path of the heat source would be heated. Because some heat immediately starts to flow back, the amount of expansion and subsequent contraction varies until it tapers off to zero in the cold metal.

RELATIVE EXPANSION VALUES AND MELTING POINTS

Metal or Alloy	Approximate Expansion* Between Room Temperature and *500 deg., F., in./in.*	*1,000 deg., F., in./in.*	*1,500 deg., F., in./in.*	*Approximate Melting Point, deg. F.*
Aluminum	0.006	0.012	—	1,220
Brass	0.005	0.010	0.014	1,706 to 1,850
Bronze	0.005	0.010	0.015	1,535 to 1,832
Copper	0.004	0.009	0.014	1,981
Iron,				
Cast	0.004	0.007	0.011	2,795
Wrought	0.003	0.006	0.010	2,786
Monel	0.004	0.007	0.011	2,470
Nickel	0.003	0.006	0.010	2,651
Steel**				
Low Carbon	0.003	0.006	0.010	2,714 to 2,768
Stainless	0.004	0.010	0.014	2,570 to 2,765

*Expansion rates vary with temperatures. Values shown are approximate averages, in inches, for each inch of metal.
**The physical properties of all steels vary widely with their composition.

CHECK BLOWERS AND EXHAUST SYSTEMS with

The Alnor Velometer

Air velocity can be measured directly and quickly with the Alnor Velometer. This convenient instrument gives you instantaneous direct readings in feet per minute, reliable check of exhaust system operation. Extension jets permit use in ducts and many other places inaccessible by other means.

The Alnor Velometer is built in several standard ranges, 0-200 to 0-6000 fpm, and up to 20 inches static on total pressure. Special ranges available up to 24,000 fpm. Write for velometer bulletin with complete description.

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420 NORTH LA SALLE STREET • CHICAGO 10, ILLINOIS

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DES MOINES STOVE REPAIR COMPANY

SAM C. GREEN
FRED R. GREEN

DES MOINES, IOWA
SINCE 1869

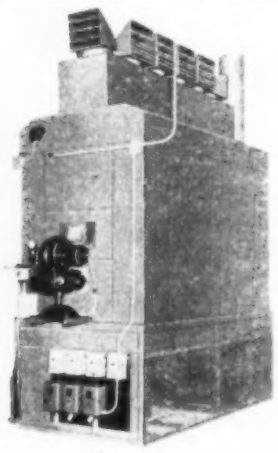
Zideck—Stamping and Flanging

(Continued from Page 100)

the thinner it is, the narrower flange will the rubber turn, and vice-versa. For edging the metal, especially where the bend is desired to be sharper than can be made in rubber, or where a narrower flange is wanted, it is best to do the work in special forms made of metal, or in forms of wood or masonite, lined with metal strips. In small quantity output of one and the same size product, the "edging" can be done as heretofore, in the turning machine.

Stamping—Real and Imitation

To emphasize the difference between doing "stamping" in steel dies and imitating the formatures by using "rubber" for the male die, we show in the drawing, Fig. 12, a sheet metal disc positioned for operation between two reciprocating dies. In looking at the picture we see that a considerable portion of the disc must be bent down and compressed to the contour of the male die. But if we have the female die only (the upper die in the picture), we can press it over the disc, reposing on a rubber block, and the rubber will force the sheet metal into the cavity in the die, drawing out the metal—instead of compressing it.



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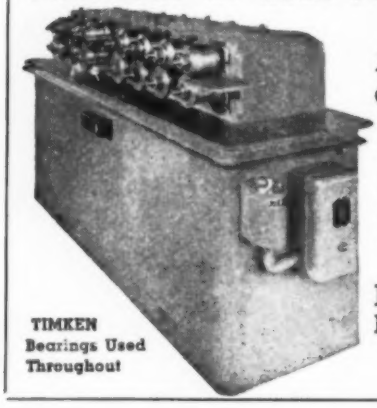

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Fifteen years' experience guarantee you the cooperation and solutions you need to solve intricate roll forming prob'ems. Send us a sample or sketch for a quotation. Remember that Dahlstrom Roll Forming machines enable you to produce finer work with a minimum of time and expense.

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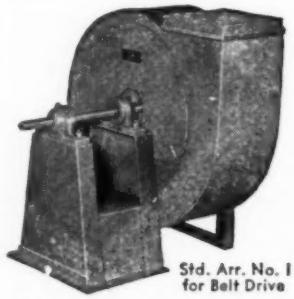

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New and improved "EX" Fans are now available in standard sizes from No. 15 to No. 80 and from 200 to 30,000 CFM Capacity with pressures up to 15" W.G. These fans are commonly used for exhaust problems to handle dust, fumes, shavings, etc., but can be adapted for forced draft service.

"EX" Fans are furnished in all standard arrangements of the N.A.F.M. The design is such that it can be easily modified to suit special assemblies, thus "EX" Fans are ideal for resale purposes, as part of factory assembled units.

Write us about your problems. Send for Bulletin No. EX-41

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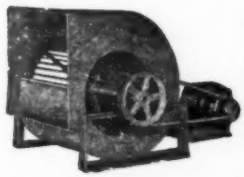
SPECIFY REX BLOWERS

THE REX BLOWER LINE assures superior service to users because it includes enough models to provide an extra-wide choice of air deliveries (from 400 c.f.m. to 32,000 c.f.m.), each at a number of speeds. Meeting air movement requirements accurately keeps both the initial cost and operating cost of a heating system as low as possible. There's no need to seriously over-power an installation to assure adequate comfort at peak of demand—or grossly under-power one to cut original expense. In the Rex Blower family you can readily find a "happy-medium" model that will give maximum all-around satisfaction. Send for complete specifications and performance data charts today.



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LOUVERS

for Rust-Proof Ventilation

Arr-O-Line Louvers are made with materials that are rust-proof, acid resisting and corrosion proof. The face frame is Masonite Prestwood, no seams, spotwelds, rivets or screws. Arr-O-Line Louvers have unobstructed air travel which provides maximum ventilation. Louver boards are free from frame to allow for expansion.

SPECIAL Louvers ➤
for new construction
- Easy to Install
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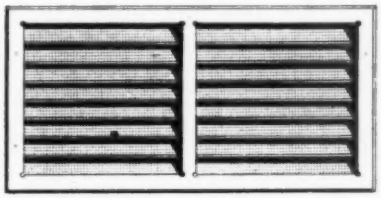
STANDARD Louvers — good for the life of any standard building. Can be installed from the inside. Made in 11 sizes.

LOUVERS for Attic Ventilation



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LUMITE PLASTIC SCREEN
- Won't stain
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ARBOR PRESSES • FOOT PRESSES • SQUARING SHEARS

Warm Air Research Report

(Continued from Page 111)

Ceiling space is left open for future ceiling panel installation.

e) Plumbing fixtures received. Installation due shortly.

f) Ceiling surface installed. Plywood wall panels 25% complete.

g) Kitchen cabinet assembly begun.

h) Furnace installed. Basement duct work 25% complete.

i) About 80% of instruments on order have been received. Installation not possible until mounting panels have been received.

j) One thermopane window just received. Not installed as yet.

Intensive work should begin in January with instrumentation which will require much time.

Blower Research Program
(Buckley, Mertens, Boland, Stein)

a) Calibration of four sharp-edged orifices in air-measuring box has been completed.

b) Traverses of the outlet duct from the box and entering the furnace-blower combination, have been started in an attempt to find the minimum length of outlet duct neces-

THE *Majestic*
HEAVY DUTY STEEL
STOKER FURNACE
TOPS ALL PAST ACHIEVEMENTS IN HEATING CONVENIENCE
For Any Make or Type DOMESTIC STOKER

CLEANS UP THE CLINKER CHORE

Here's a home-heating unit for gravity or forced air systems that attains new standards of convenience, trouble-free service, and fuel economy. It reflects the skill of craftsmanship gained in Majestic's 38 years of heating experience. Designed expressly for stoker firing, the furnace accepts any domestic stoker on either side. It is made of rugged, boiler plate steel, with leak-proof joints throughout. The handy inner can receives clinkers without the escape of fly-ash, dirt, or gas. *Conduvectors*—special radial fins in furnace crown—step up the heat output and assure greater heating efficiency with less fuel.

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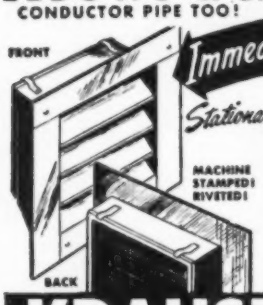
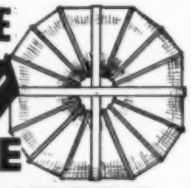
CONDUCTOR PIPE TOO!
Immediate Delivery
Stationary LOUVRE VENTILATORS





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WRITE FOR PRICE LISTS AND FURTHER DETAILS
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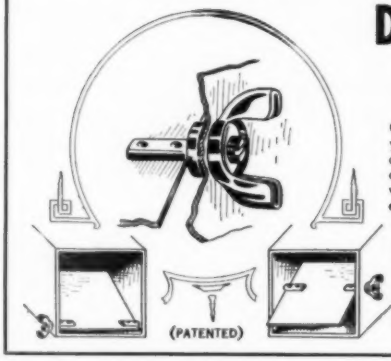

Order a gross today through your jobber of these superior quality damper controls used on either square or round pipe, it will enable you to turn out jobs easier and faster.

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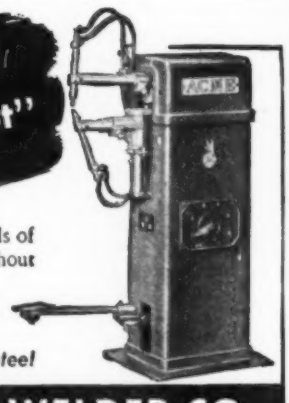
SPOT WELD WITH ACME "Hot Spot" WELDERS



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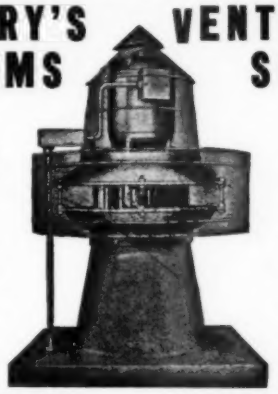

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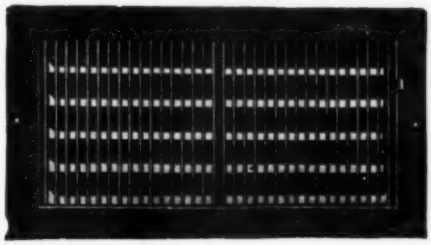

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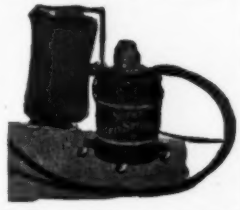

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sary for proper pressure measurements.

c) A layout for the final test setup has been drawn, and installation will be begun in January.

d) A progress report of the project was prepared and presented at the January meeting of the Association.

Branch Take-Off Fittings from Extended Plenum Duct (Zieve)

a) Test work on several top take-off fittings is in progress.

b) An analysis of data regarding the pressures in the main trunk duct, upstream and downstream from the take-off, is being made.

c) A progress report will be presented at the January meeting.

Survey of Panel Heating Progress (Carroll)

a) Additional literature is being catalogued, abstracted, and filed.

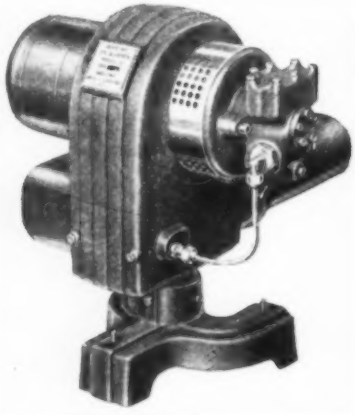
b) Tentative plans are being made for a publication dealing with both theoretical and practical phases of panel heating with warm air. This should cover all the various approaches that have been tried, or are proposed, and a summary of whatever test data are available. The staff will welcome specific construction or design details of any installations, and particularly desire operating or performance data.

Preparation of Design Manual No. 9

a) Design Manual No. 9 will, when published, be a revision of the Technical Code and will cover installations having design heat losses in excess of about 150,000 Btu per hr.

b) This work was begun by Prof. Ross Martin as a graduate student project and is being carried on by David Levinson with some assistance by R. W. Roose. A series of tables are being prepared that will enable a designer to select from a wide range of bonnet temperatures, air volumes, static pressures, and register sizes.

c) An intensive search has been made for reliable data concerning the relation of air throw to register air volumes



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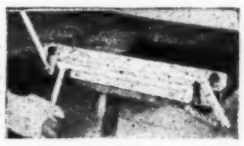

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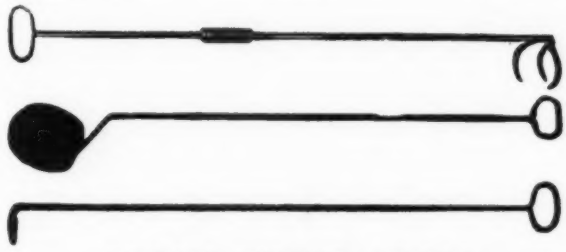

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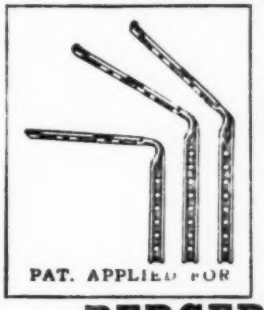

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and air velocities. Tables have been proposed that will summarize the best available data. Three meetings have been held with the members of the Installation Codes Committee and sufficient progress has been made to justify a progress report to the Association in January. Plans are made to use this new design procedure in the advanced class at Michigan State College in March 1947.

Further Laboratory Tests on Illinois Smokeless Furnace

(Professor Fellows directing graduate students, M. E. Childs and A. E. Walmsley)

a) A new design of the Illinois Smokeless Furnace has been installed in the laboratory in December and preliminary performance tests are being conducted by graduate students, Childs and Walmsley.

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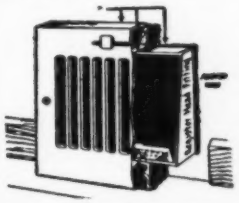

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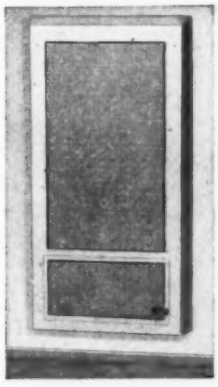

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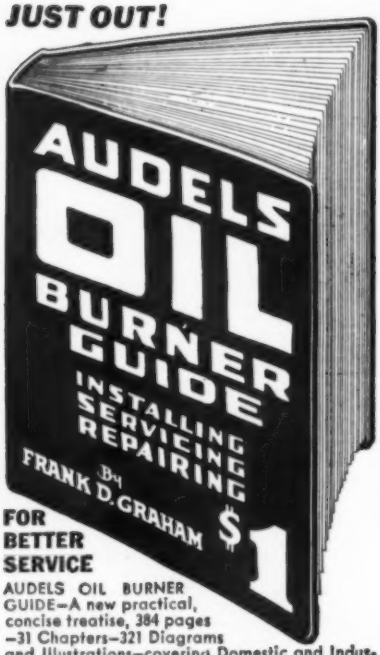

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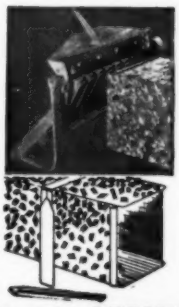

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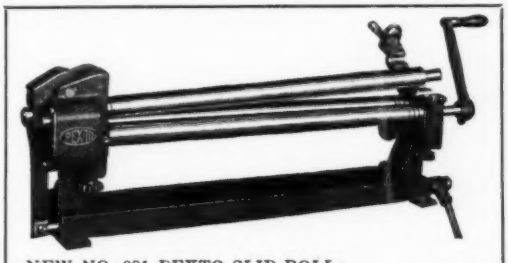

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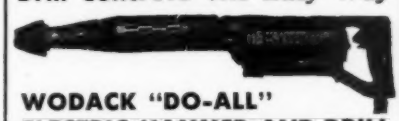

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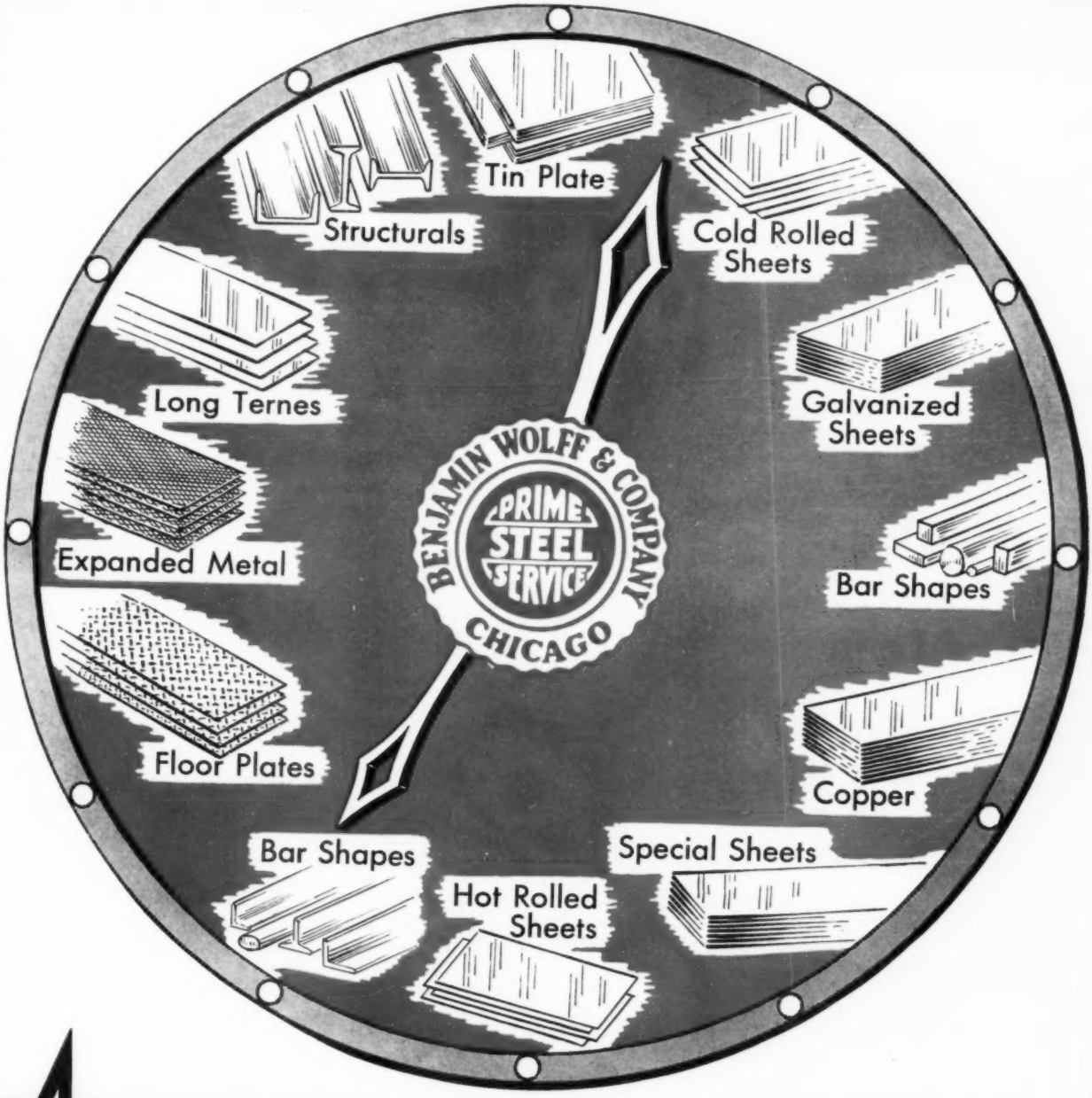

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